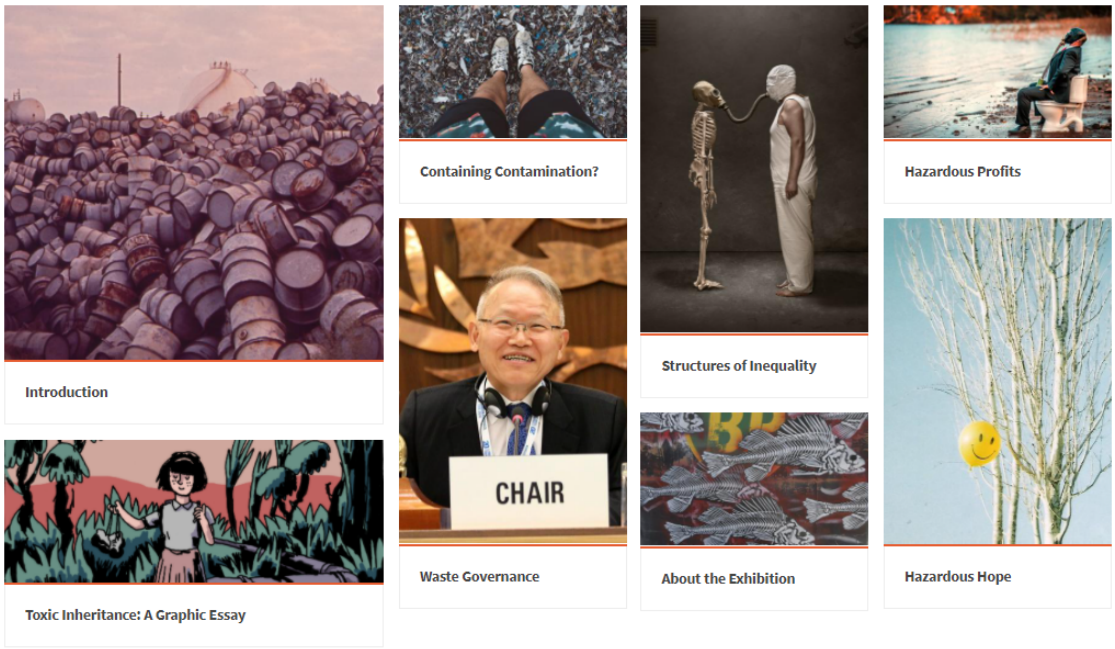
Toxic Relationships: Uncovering the Worlds of Hazardous Waste

Maximilian Feichtner, Jonas Stuck, Ayushi Dhawan, Christina Lennartz, and Simone M. Müller

Modern societies' hazardous by-products cast a dark shadow over the planet. A threat to humans and the environment alike, hazardous waste comes in many guises: discarded batteries, asbestos, giant ships, or tailings from mining operations. While these objects might not seem dangerous at first sight, they have characteristics and components that make them potentially deadly. This virtual exhibition gives you an insight into the obscure world of hazardous waste, its questionable trade across the globe, and the people successfully fighting for safe and just waste management. The *Hazardous Travels* research team takes you on a journey both into our research and to the edges of our societies that many prefer not to see.



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Introduction

> It is simply no longer possible to look away from polluted landscapes and say, as Americans once did, that toxic trash doesn't exist, or that it is someone else's problem, or that it will disappear into the earth.
>
> —Richard S. Newman

Hazardous waste is the dangerous shadow of the industrial age. It is difficult to grasp, both as a phenomenon and as a material substance. Often invisible, it affects people around the globe, yet in unequal ways: hazardous waste poses a risk to human lives and to the ecosystems they inhabit.

Hazardous waste is a twentieth-century phenomenon and a late twentieth-century problem. For as long as "industry" has existed, there has been waste that was harmful to health and the environment . With the chemical-industrial revolution of the 1930s and the age of consumption after the Second World War, this danger rose exponentially. Additionally, the Cold War arms race and concomitant stockpiling of chemical and atomic weapons with an "expiration" date created massive amounts of hazardous waste. Ever-stricter waste management regulation added to the growth of hazardous waste—more materials were identified as dangerous and blacklisted. Many everyday objects, such as batteries, motor oil, or electronic gadgets also turn into hazardous waste and require special care and treatment. Yet, hazardous waste is not easily contained; it often turns out to be more mobile than one would wish—both as a pollutant and a contested commodity. This exhibition will introduce you to the hidden world of the global waste economy. But fear not: there is hope at the end of this waste story!

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This haunting graffiti on a trash container exhibited close to Lyon, France, protests the ecological catastrophe caused by the oil spill from BP's Deepwater Horizon in the Gulf of Mexico in 2010. Photograph by Thierry Ehrmann, 2010.
Accessed via Flickr on 13 April 2021. Click here to view source.

Every day more hazardous waste material accumulates and moves around on the planet. Citizens and businesses of the European Union, for instance, generated more than 100 million tons of hazardous waste in 2018 alone—that is about 200 kg per person and 11.6% more than in 2010. The numbers are on the rise and threaten not only the waste's producers, but those beyond the sites of its production. The harmfulness of hazardous wastes does not stop at national borders, and that is why a global perspective offers a more comprehensive picture. Despite decades of discussions, legislators around the globe have yet to agree on a uniform definition of what constitutes hazardous waste. Apart from a shared philosophical understanding of hazardous waste as something which may pose a substantial harm to humans and the environment, countries still differ when it comes to the hard criteria. Around the globe, you find differences concerning thresholds and doses of exposure, materials per se, containment technology, disposal practices, or health and safety standards for sanitation workers. In the past and still today, these changing definitions of hazardous waste create legal and not-so-legal loopholes for waste traders who seize the opportunities generated by those discrepancies. In general, there are

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certain characteristics that give waste its particularly hazardous character: toxicity, flammability, corrosivity, or high reactivity. Another way of coming to a common understanding is singling out specific components: waste containing PCBs, arsenic, or explosives obviously requires special management to protect people and ecosystems.

The original exhibition includes the film *Burning Futures* by Theresa Leisgang. All across the world, indigenous communities are at the forefront of combating the climate crisis. In the Amazon region of Ecuador, they have been defending ecosystems against the extractive fossil fuel industry for decades. With their fight against gas flaring, they stand up for the health of people and planet. View the film online here: https://youtu.be/pvBOwqTzo7o.

Since the 1970s dealing with, and especially getting rid of such waste, has evolved into a worldwide business. In general, companies usually try to dispose of their hazardous by-products in the most inexpensive manner. This often meant dumping materials on site, disposing of it in a nearby stream, or paying a small fee to local waste haulers to move it somewhere close to their facilities. Facing the conundrum of a growing mountain of hazardous waste, stricter waste disposal regulations, and a growing opposition to waste dumping facilities as of the 1970s, both businesses and municipalities started to look elsewhere to dump their hazardous barrels, sludge, and incinerator ash. Often, elsewhere meant vastly expanding the disposal radius, whether over into the next county, the next federal entity, a neighboring country, or some far away continent. Hazardous waste turned into a dangerous yet lucrative commodity and the world witnessed the emergence of an unregulated waste economy. Most of this multi-million-ton and multi-million-dollar trade took place between OECD-countries. Many shipments, however, also set off under questionable pretexts, destined for countries in the Global South that often lacked the appropriate waste management infrastructure for resource recovery and final disposal. While most of this trade was legal, it thrived on structures of inequality and colonialism both within and between countries, reinforcing racism and classism. IIt is no coincidence that in these unequal trading patterns, a lot of US waste moved to what was for centuries perceived as the country's "backyards" such as the Caribbean. It is also no

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coincidence that within the United States, predominantly poor and minority communities have to live in close vicinity to hazardous waste sites.

US ammunition equipped with depleted uranium turned bombed out Iraqi tanks into radioactive waste in the 1991 Gulf war. Photograph by Gawlowicz, 1991. US Navy.
Accessed via Wikimedia on 13 April 2021. Click here to view source .

Ecological disasters and human tragedies linked to hazardous waste have been key turning points for more protective environmental legislation in many countries. The success of enacting stricter regulations in the Global North, however, had a terrible side effect: they sparked the export of hazardous material to other countries where it could be disposed of at a much lower price. When the US Resource Conservation and Recovery Act and the Hazardous and Solid Waste Amendments entered into force in 1980 and 1984 respectively, export numbers rose substantially. In the 1990s, thanks to the concerted effort of activists from all over the world, two crucial UN conventions entered into force to control the global waste trade. This, however, was not the end of the global trade of hazardous waste, as the waste cast its toxic shadow in new forms, such as dubious recycling schemes. As a result, humanity is now facing a condition that we as a research team call the “toxic commons”: the fact that humans, nonhumans, and, in the long run, the Earth system as a whole bear the burden of the intensifying spread of hazardous waste in an increasingly, yet unequally toxified world.

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Asbestos roof plates and shingles at an illegal landfill in Fürstenwalde, Germany. Photograph by Jonas Stuck, 2019.

Tracking the shady history of the global hazardous waste trade is the aspiration of the authors and curators of this exhibition who together make up the research group *Hazardous Travels: Ghost Acres and the Global Waste Economy*, financed by the German Research Foundation (DFG). In four individual research projects, the mobility and mutability of hazardous waste came under scrutiny. The group followed the trajectories of the hazardous waste trade, the export of waste objects such as decommissioned ships, "dirty" industries, and the spread of toxins across the Americas, Africa, Asia, and Europe. A mixed-methods approach made the waste itself, as well as human and nonhuman actors, visible throughout the last five decades. Archival research, ethnographic fieldwork, oral histories, and the study of secondary literature informed the research projects. Check out this bibliography with key readings inspiring our research on hazardous waste. This exhibit fundamentally draws from the experiences, encounters, and research decisions of the members of the *Hazardous Travels* team—including interviews in Hindi, German, Spanish, French, and English as well as treasures from dozens of archives. Of course, these attempts to follow the trails of waste and its connections across continents over several decades necessarily leaves countless blind spots and undetected stories, given that (corporate) archives often remain closed to curious eyes and due to the sheer extent of the hazardous waste problem. In their research designs, the *Hazardous Travels* members decided not to focus on radioactive waste, as it represents the only kind of hazardous waste that has been well defined, regulated, and has a particular legal trajectory—hence radioactive

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waste is less mutable than the kinds of waste you will discover in this exhibition. For this exhibition, the authors took a step back from their individual projects to combine and synthesize their insights on the global waste economy.

Dear exhibition visitor, you are now invited to explore the rooms (or chapters) of this virtual exhibition in any order you like and dwell there as long as you wish. But before you do so, take a short break from reading and enjoy this brief narrated story of the global waste economy as a mini-podcast:

The original exhibition includes a podcast on the intriguing history of the global waste economy in 3 minutes. © 2019 DFG *Hazardous Travelsresearch* group and Ruhi Deol. Listen to the podcast here: http://www.environmentandsociety.org/exhibitions/toxic-relationships/introduction.

Websites linked in this text:

- https://www.epa.gov/hw/learn-basics-hazardous-waste
- https://ec.europa.eu/eurostat/statistics-explained/index.php/Waste_statistics
- https://youtu.be/pvBOwqTzo7o
- https://www.epa.gov/sites/production/files/2015-09/documents/webpopulationrsuperfundsites9.28.15.pdf
- http://www.environmentandsociety.org/exhibitions/toxic-relationships/introduction

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- https://www.flickr.com/photos/40936370@N00/4906629969
- https://commons.wikimedia.org/wiki/File:Destroyed_Iraqi_T-55A_tank_near_an_oil_field_during_the_gulf_War.JPEG

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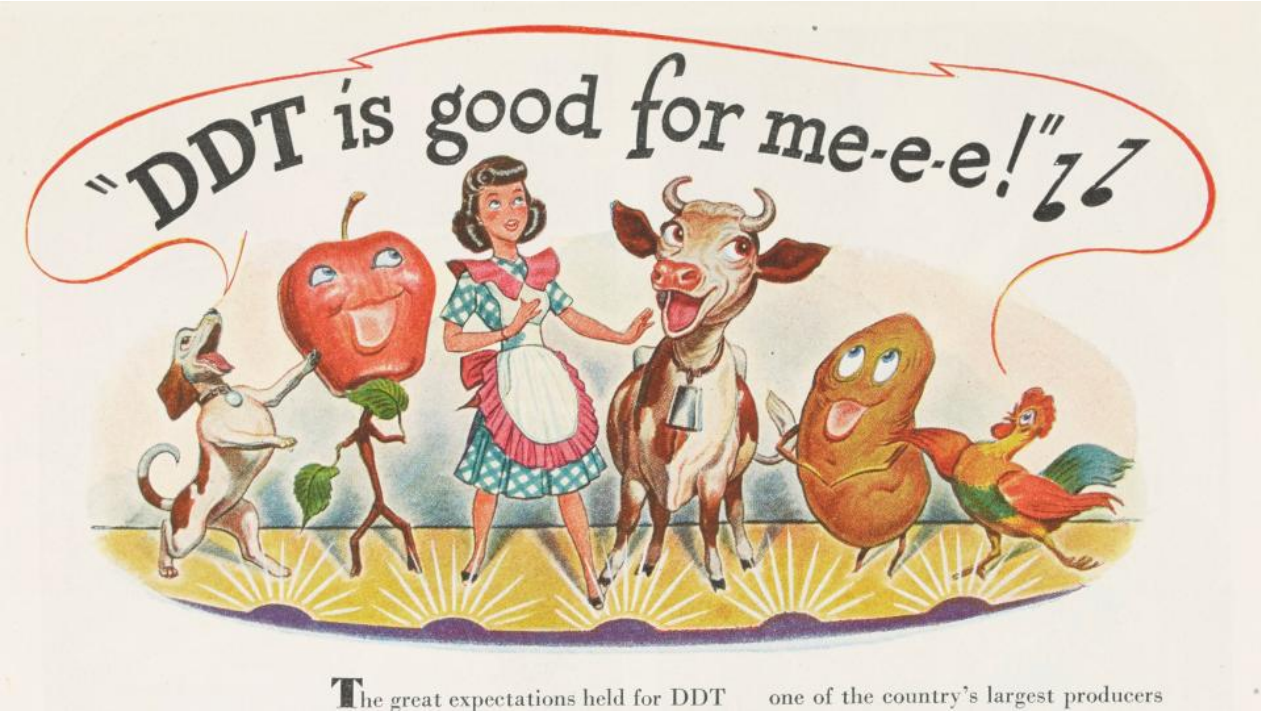
Containing Contamination

Investigative journalists and environmental activists have sparked a growing public and political awareness of possible risks related to hazardous waste since the 1960s. A large number of politicians, businesses, and operators of waste management facilities in turn suggested that hazardous waste can be treated, contained, and finally disposed of without causing further harm—all thanks to the same technical ingenuity that led to its production in the first place. However, hazardous waste has proved over and over again to be more dangerously mobile, uncontainable, and mutable.



"DDT is good for me-e-e!" Color print magazine advertisement for Pennsalt DDT products. This ad appeared in *Time Magazine*, 30 July 1947.
Courtesy of Science History Institute. Philadelphia.

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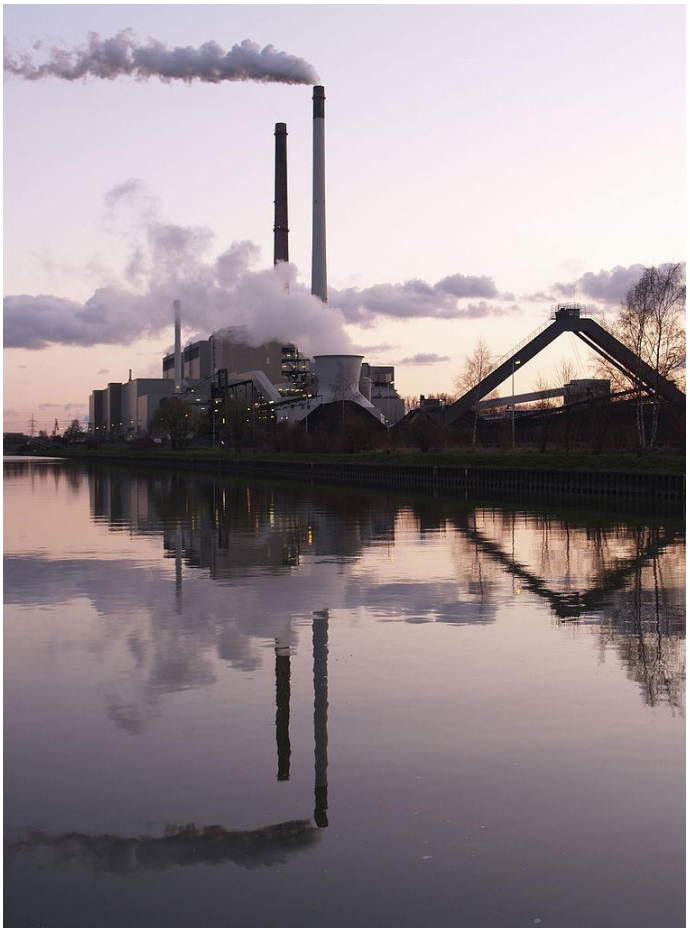
Containing the uncontainable?



Emissions from a coal power plant in Datteln, Germany. Photograph by Arnold Paul, 2006.
Accessed via Wikimedia on 4 May 2021. Click here to view source .

Engineers around the globe designed methods to neutralize the hazardous components of different types of waste and even recover energy and material resources before its final disposal. Incineration, chemical and biological treatment, as well as landfilling are common waste treatment techniques that have been increasingly refined over the decades. Waste incineration, for instance, as a practice that involves the combustion of organic material contained in hazardous waste, first emerged in the late nineteenth century. The technology then developed from simple "destructors," as the first generation of incinerators were called, with essentially no pollution control, to more refined waste-to-energy plants (WTE) in the 1970s and 1980s, to today's high-technology energy plants with flue gas control. Still, controlling hazardous waste has proven to be quite a challenge (with deadly implications) even under such controlled conditions. While the waste incinerators massively reduced the

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amounts of waste to be disposed through burning, they created new, even more toxic by-products: incinerator ash (both bottom and fly ash) and flue gases, the management of which needed new technological fixes. Also not all countries can afford the latest high-technology waste disposal facility, and incinerators without adequate filters will contribute to air pollution. Additionally, "burn pile" or "burn barrel" waste combustion technology is still common in many places around the globe, for instance at Agbogbloshie, one of the world's largest e-waste scrap yards. To get to the valuable metals, waste workers melt off the plastic insulation of USB-cords and other items on a pile (burn pile) or in a barrel (burn barrel) all the while standing next to it, inhaling the toxic smoke.

Another all-too-common waste management strategy in the oil industry is to simply hope for the best. For instance, in the United States and beyond, oil companies re-inject liquid hazardous waste into underground rock formations with no or only minimal treatment. Paul Rosenfeld and Lydia Feng observed that "[o]ften times, hazardous waste is disposed of without prior treatment with the hope that the waste will eventually transmute into less hazardous wastes over time." It might not come as a surprise that not all hazardous components have the generosity to simply disappear—or, as in the case of radioactive waste, it might take some millennia. Humanity has had the dire experience that there simply is no "ultimate sink" for hazardous waste, which eliminates and solves all problems of toxicity.

The decommissioned US Navy destroyer *Towers* slowly sinks in the Pacific Ocean after being used as a target hulk for live-fire sinking exercises (SINKEX) in 2002. The decommissioned ships are first made environmentally safe prior to towing and sinking in safe waters off prospective coastlines. In the past, the US Navy sank old ships loaded with outdated chemical weapons and hazardous waste in a similar way. Photograph by Andrew Betting, US Navy, 2002.
Accessed via Wikimedia on 19 April 2021. Click here to view source .

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In contrast, dealing with hazardous waste is a dangerous and perpetual task. When containment fails, waste and its hazardous components start to disperse—they are flushed away by rain, taken up by animals and plants, and slowly migrate up the food chain. Through diffusion, human bodies themselves end up becoming sinks for the toxins emitted by modern society. Today, the typical European body contains about four hundred foreign chemicals, many of them with endocrine disrupting capacities. In 1970, that figure was 60. As Rob Nixon argues, pollution can be understood as a form of slow violence—toxic leaks and spills that affect human and more-than-human lives for generations to come. Human bodies and the spaces we inhabit can not be understood as individual, closed off, and protectable any more, but they are often rooted in highly relational, situated and contingent sets of practices.

Today, hazardous chemicals are spread all over the planet, which is often facilitated by a lack of waste containment practices during industrial manufacturing, marketing, and disposal processes. One thing is almost for sure: once the waste is produced, it won't stay put where it was supposed to stay. Either the waste itself will be moved or its hazardous components take up the journey and contaminate air, soil, and water—in your backyard and in countries far away. In the twentieth century, dumping waste into surface waters became common because it was cheap and terrestrial jurisdictions did not apply in such spaces. Municipalities dumped sewage sludge, the Corps of Engineers dredge spoils, and industrial companies their production run-offs. In the 1960s and early 1970s, the US military made international headlines when conducting an operation to dump thousands of tons of unwanted munitions, including chemical weapons, off the Atlantic coast. Have a look at this virtual exhibition chapter by Hsuan Hsu on the deadly aftermath of outdated weapons . At around the same time, Dow Chemical company discharged wastewater containing alarming amounts of mercury in the Great Lakes area. Storage infrastructure continues to collapse and cause environmental catastrophes when its content starts to disperse—just think of the toxic mining sludge flushed down the Rio Doce in Brasil in 2015.

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After a deadly mining dam collapse in Brazil in 2015, the Rio Doce swept millions of tons of toxic tailings into the Atlantic Ocean. NASA Earth Observatory image by Joshua Stevens, 2015.

Courtesy of NASA.
Click here to view image source .

Finally, many hazardous waste treatment facilities are planned following the probability principle, i.e. how likely an extreme weather situation such as an earthquake or tsunami might be and not the possibility principle, i.e. that is it possible at all. They are not made to withstand extreme situations that might become ever more prevalent due to the changing climate. In 2017, for instance, Hurricane Harvey unleashed the toxicants of more than 41 Superfund sites into the unprotected environment.

Contamination by hazardous waste comes in many forms. Only a few pollution events are as spectacular as a dam break. More often, health risks and problems rise slowly and only become visible with decades of delay. Proving the direct health impacts of hazardous waste management sites has been difficult, though residents in neighboring communities may exhibit medical conditions like cancer, respiratory diseases, or reduced birth weight of newborn babies, which have been linked to toxic environments. At times, private companies and government agencies took the deliberate decision to dump their unwanted hazardous waste on unsuspecting communities, often causing serious pollution in faraway places.

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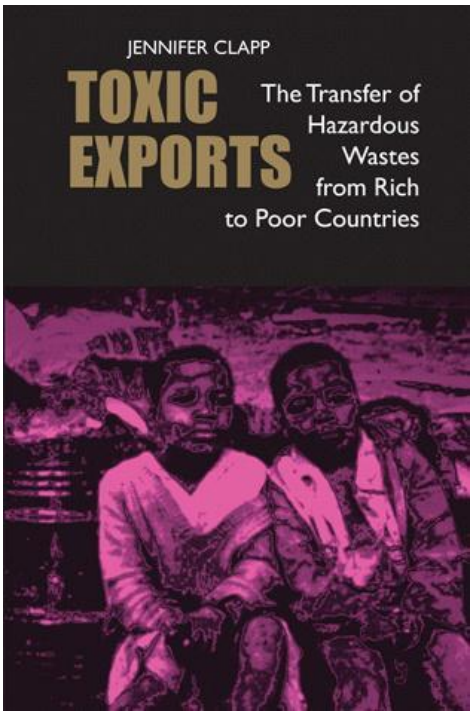
The original exhibition features an interactive gallery of book and video profiles from the Multimedia Library. View images of the items on the following pages.



Clapp, Jennifer. ***Toxic Exports: The Transfer of Hazardous Wastes from Rich to Poor Countries*****. Ithaca: Cornell University Press, 2001**.

"In recent years, international trade in toxic waste and hazardous technologies by firms in rich industrialized countries has emerged as a routine practice. Many poor countries have accepted these deadly imports but are ill equipped to manage the materials safely. In her book, Jennifer Clapp addresses this alarming problem. Clapp describes the responses of those engaged in hazard transfer to international regulations, and in particular to the 1989 adoption of the Basel Convention. Clapp concludes that the dynamic nature of hazard transfer results from increasingly fluid global trade and investment relations in the context of a highly unequal world, and from the leading role played by multinational corporations and environmental NGOs." (Adapted from Cornell University Press)

Read the introduction here .

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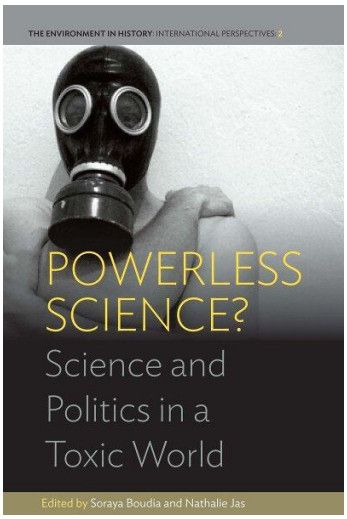
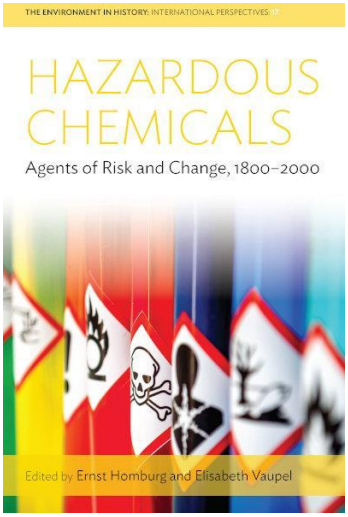


Boudia, Soraya, and Nathalie Jas, eds. *Powerless Science? Science and Politics in a Toxic World*. New York, Oxford: Berghahn Books, 2014.

"In spite of decades of research on toxicants, along with the growing role of scientific expertise in public policy, problems surrounding contaminants and their effects on health have never appeared so important. This calls for a reconsideration of the roles of scientific knowledge and expertise in the definition and management of toxic issues, which this book seeks to do. It looks at public controversies, environmental and health crises, economic interests, and political responses, and demonstrates how and to what extent scientific knowledge about toxicants has been caught between scientific, economic, and political imperatives." (Adapted from Berghahn Books)

Read the introduction here .



Homburg, Ernst, and Elisabeth Vaupel, eds. *Hazardous Chemicals: Agents of Risk and Change, 1800–2000*. New York: Berghahn Books, 2019.

"Although poisonous substances have been a hazard for the whole of human history, it is only with the development and large-scale production of new chemical substances over the last two centuries that toxic, manmade pollutants have become such a varied and widespread danger. Covering a host of both notorious and little-known chemicals, the chapters in this collection investigate the emergence of specific toxic, pathogenic, carcinogenic, and ecologically harmful chemicals as well as the scientific, cultural and legislative responses they have prompted. Each study situates chemical hazards in a long-term and transnational framework and demonstrates the importance of considering both the natural and the social contexts in which their histories have unfolded." (Text from Berghahn Books)

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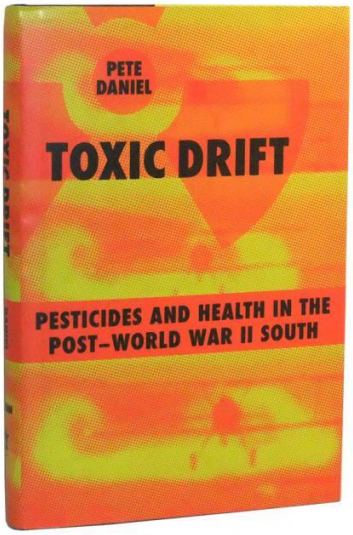

Daniel, Pete. *Toxic Drift: Pesticides and Health in the Post-World War II South*. Baton Rouge: Louisiana State University Press, 2005.

"Following World War II, chemical companies and agricultural experts promoted the use of synthetic chemicals as pesticides on weeds and insects. It was, Pete Daniel points out, a convenient way for companies to apply their wartime research to the domestic market. In *Toxic Drift*, Daniel documents the particularly disastrous effects this campaign had on the South's public health and environment, exposing the careless mentality that allowed pesticide application to swerve out of control. The quest to destroy pests, Daniel contends, unfortunately outran research on insect resistance, ignored environmental damage, and downplayed the dangers of residue accumulation and threats to fish, wildlife, domestic animals, and humans." (Text from Louisiana State University Press)

Altemeier, Inge. *Das Gift kommt zurück* [The toxins return]. Hamburg: Altemeier & Hornung Filmproduktion, 2009. 45 min.

"Billed as a crime thriller for the age of globalization, this documentary raises concerns about apparent lapses in the regulation of imported goods with reference to toxic substances. The toxins range from traces of pesticides in articles such as clothing to the nerve gas routinely used to protect the contents of containers shipped from Asia to the port of Hamburg. Though experts have estimated that around one in five of these containers is contaminated, the documentary shows that customs officials in Hamburg have no legal means of protecting consumers from associated risks to their health." (Source: Official Film Website)

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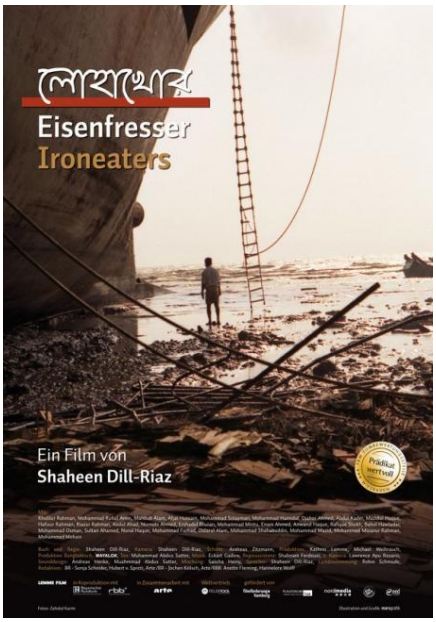

Dill-Riaz, Shaheen. *Eisenfresser* [*Ironeaters*]. Hamburg: Lemme Film, 2007. HDV / 16mm, 85 min.

"Ever since his childhood, the shipbreaking yards of Chittagong in the south of Bangladesh had remained something of a mystery for director Shaheen Dill-Riaz, who was born and grew up in Dhaka. Following the Brazilian photographer Sebastião Salgado and the American journalist William Langewiesche's documentation of conditions there, Dill-Riaz began in 2001 the research that would lead to the film *Eisenfresser* or '*Ironeaters*.' The title of the film is a translation of the Bengali 'lohakhor,' used to refer to the shipyard workers who are employed for 'starvation wages' to dismantle some of the larger waste products of the Western world." (Source: Adapted from the Official film website)

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Case study: The mysterious death of water buffalos in Egypt

Water buffaloes represented a valuable asset for rural households in Egypt. Unknown photographer, n.d.

Courtesy of Getty Research Institute, Los Angeles (2008.R.3).
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Over the course of 1971, Egypt was struck by a strange epidemic in water buffalos. At the time, the animals were key components of rural life in Egypt. Many families deemed their animal so valuable that they did not use it for fieldwork. When the animals fell ill in 1971, they first developed paralysis in their hindquarters. Then they would show difficulty breathing and trembling in the forelimbs. After roughly two months of suffering, the animals either had to be put down or died. Up to 1,300 water buffaloes succumbed to this strange illness, and many a family fortune vanished with the animal. Over the next three years, 65 Egyptian farmers also showed the same symptoms as the animals. Some of them died a similarly gruesome death.

In the beginning, farmers, medics, and officials were unsure about the causality of this mass dying of water buffaloes. Epidemiological investigation by the Egyptian government, finally, led to the suspicion that the

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agricultural use of a new pesticide had caused the epidemic. Previously, Egypt had bought the pesticide Leptophos from a company in the United States with loans from the United States Agency for International Development (US AID).

Detail of the graphic essay "Toxic Inheritance" that takes you on an intriguing visual journey to the polluted rainforests of Ecuador. Click the image to read the full essay.

This transaction, however, was no ordinary business deal under the header of aid and development. US AID and the American company Velsicol kept secret that Leptophos was actually an unregistered chemical. The US

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Environmental Protection Agency had considered it to be too toxic and harmful for use in the United States. Yet, instead of disposing of the chemical at a hazardous waste site in the United States, the company sold Leptophos to more than 30 countries in the Global South. Egypt had little to no environmental and consumer protection legislation in place that could have helped avert the impact of this chemical.

How could this purposeful contamination happen? A major factor allowing for such hazardous material to be moved around the globe is its conceptual mutability: Almost up until today, there is no internationally binding definition of what constitutes hazardous waste beyond a philosophical definition. Instead of rigorous and strict common thresholds or waste management regulations, these definitions are formed through political, cultural, and socio-economic factors. But whatever you call or label them, the material properties of hazardous wastes remain and pose serious risks to human and animal lives. Many forms of pollution remain largely invisible. A combination of science, good storytelling, and the arts can make it visible. How, you might ask? Just check out the beautiful graphic essay *Toxic Inheritance* by Amelia Fiske and Jonas Fischer about oil contamination in the Ecuadorean rainforest.

Websites linked in this text:

- https://www.elsevier.com/books/risks-of-hazardous-wastes/rosenfeld/978-1-4377-7842-7
- https://www.hup.harvard.edu/catalog.php?isbn=9780674072343
- http://www.environmentandsociety.org/exhibitions/risk-and-militarization/aftermaths
- http://www.environmentandsociety.org/arcadia/mining-and-environmental-destruction-minas-gerais-historical-comparison
- https://seeingthewoods.org/2017/11/10/toxic-floods-lets-talk-about-the-weather/
- https://heinonline.org/HOL/Page?handle=hein.journals/sjilc7&id=277&collection=journals&index=
- http://www.environmentandsociety.org/exhibitions/toxic-relationships/toxic-inheritance-graphic-essay

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- https://digital.sciencehistory.org/works/1831ck18w
- https://commons.wikimedia.org/wiki/File:Coal_power_plant_Datteln_2.jpg
- https://de.wikipedia.org/wiki/Datei:USS_Towers_(DDG-9)_sinking_Pacific_Ocean_after_being_used_as_a_target,_9_October_2002_(021009-N-8590B-005).jpg
- https://earthobservatory.nasa.gov/images/87083/contaminated-rio-doce-water-flows-into-the-atlantic
- http://www.cornellpress.cornell.edu/book/?GCOI=80140100368150
- http://www.environmentandsociety.org/mml/toxic-exports-transfer-hazardous-wastes-rich-poor-countries
- https://www.berghahnbooks.com/title/BoudiaPowerless
- http://www.environmentandsociety.org/mml/powerless-science-science-and-politics-toxic-world
- https://www.berghahnbooks.com/title/HomburgHazardous
- http://www.environmentandsociety.org/mml/hazardous-chemicals-agents-risk-and-change-1800-2000
- https://lsupress.org/books/detail/toxic-drift/
- http://www.globalfilm.de/film_das_gift_kommt_zurueck.shtml
- http://www.eisenfresser-film.de/Eisenfresser.html
- https://primo.getty.edu/permalink/f/tjqn6u/GETTY_ROSETTAIE677588

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Structures of Inequality

The former Chief Economist for the World Bank Lawrence Summers promoted a very liberal trade regime for hazardous waste. Illustration by Jonas Stuck, 2021.

Hazardous waste trade thrives on global economic inequalities while reinforcing social and ecological inequalities. An internal World Bank memo from 1991 by Lawrence H. Summers, at the time Chief Economist for the World Bank, revealed how "dirty industries" could actually profit from global inequalities. In line with the World Bank's ethos of market liberalization, he suggested exporting polluting industries to what he called Least Developed Countries (LDCs). Summers highlighted the financial advantages of countries with lower wages. If toxicants affected workers negatively, damage for the global economy would be arguably smaller if it

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affected low-skilled ones and not those from the high-tech industry. “I think the economic logic behind dumping a load of toxic waste in the lowest wage country is impeccable,” wrote Summers. He also observed an unequal distribution of hazardous waste on a global scale that gave room to move waste from places of high population density, such as Los Angeles, to places of low population density, such as the Sahara: “I’ve always thought that under-populated countries in Africa are vastly UNDER-polluted.” And finally, he underlined the lower opportunity costs in LDCs: concerns over hazardous waste increasing the chance of getting cancer would be lower in countries with a high mortality rate among the young. Cancer treatment for people beyond their 50s and 60s is not as much of an issue if there is a critical number of citizens that do not ever reach that age.

For Summers and those supporting his arguments, his proposal was a thought experiment applying economic distribution logic to the global scale, hoping that in the end, this would lead to a general increase in economic output and improve welfare around the globe. You can have a look at The Economist article “Let Them Eat Pollution” in which they first published the leaked memo in March 1992 here . In fact, Summers’s logic of exporting hazardous waste sheds light on waste management practices that had been ongoing since the 1970s. Check out, for instance, Claudio de Majo’s short article on Italy’s Poison Ships dumping hazardous waste in Nigeria.

Not in my backyard: The globalization of local protests

Paradoxically, it was not only Chief Economists for the World Bank who were ready to sacrifice people and ecologies far away; some environmentalists were as well. Growing awareness and opposition built up exactly where most of the hazardous waste was (and still is) produced: in the Global North, with the United States being by far the biggest emitter. Long before the United States embarked on a global journey of “garbage imperialism,” a highly discriminating pattern of waste disposal had already been implemented within the country.

Hazardous waste sites often sparked local resistance with the slogan "Not In My Back Yard." Illustration by Christian Mayer, 2021.

A study from 1983 by the US Accounting Office found that three out of four hazardous waste dump sites in the southern states of the United States were situated near African-American communities—even though these communities made up only 20 percent of the entire population. The country's policies for siting waste management facilities valued people's lives according to their income and ethnic background. Native American and Black communities in particular had to bear the long-lasting toxic legacies of living close to incinerators or landfills. It is for this reason that some parts of the Mississippi River are also known as the "Cancer Alley."

Such unequal geographies of pollution led to an increasingly strong environmental justice movement, which fought against this internal waste imperialism in the 1980s. The institutionalization of environmental politics and regulations triggered exploding disposal costs of hazardous wastes, from around $2.50 per ton in 1978 to around $200 in 1987 for landfilling in the United States. This increase in disposal prices also reflected the general

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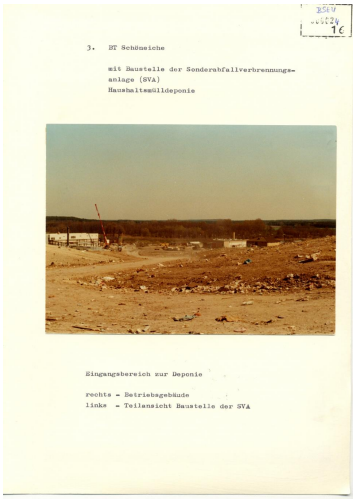
distrust of environmental activists, concerned citizens, and politicians for disposal sites of hazardous waste. Existing landfills quickly reached their capacities and new ones could not be built because of local protests. Activists campaigned against the local disposal of harmful garbage—the slogan "Not in my backyard!" was born.

In order to get rid of their waste, municipalities and private companies in the Global North found a questionable solution by exporting waste to places not willing or able to protect their own "backyards." The city of Philadelphia, for example, disposed of only very little of its own hazardous waste within city premises in the 1970s and 1980s, with the rest moved first beyond city, then state, and then international borders. First to New Jersey and Ohio, then to Panama, Haiti, or Guinea. Other municipalities and industries in the United States, West Germany, France, the UK, or Italy—to name just a few—started to export their hazardous waste too, for instance, to the Caribbean, Latin America, or West Africa. "Out of sight, out of mind" became a common mindset for hazardous waste management. In this context, Summers's memo in the early 1990s was actually a reflection of a kind of racist and imperialist thinking that had already been put into action in the preceding decades.



The pictures in this collection are from the Stasi Archive, documenting hazardous waste management in East Germany. This image shows the entry of the dump site Schöneiche and the construction site for a special waste incinerator, exclusively designed to incinerate Western waste.

This waste pit in Vorketzin (located in former East Germany) was used to dump hazardous wastes such as used oils or paint mixed with regular household waste. Unknown photographer, c. 1988.

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Double standards and waste trade

The environmental activism against new disposal sites in the Global North created a constellation in which countries with less rigid environmental regulations (often situated in the Global South), became a cheap alternative for disposal. Often, however, this business model looked promising for both sides. The exporting country saved money on the disposal costs of the hazardous materials and the importing country earned money or political influence by treating and recycling the incoming waste materials.

Before reunification, the two Germanys were a case in point. The import of Western trash to East Germany was responsible for around 10% of East Germany's hard currency import. From 1986, West German environmental legislation clearly stated that waste export was only allowed if the disposal safety was guaranteed to be on the same level as West German standards. The West German government, however, could not monitor this requirement, as all environmental data in East Germany had been classified since 1982.

Notwithstanding, the West German state of Hesse, despite having an environmental minister of the Green Party, took the controversial decision to export its hazardous waste to Europe's biggest hazardous waste landfill, Schönberg—conveniently located in East Germany. This waste dump was situated only five kilometers beyond the German-German border near the West German city of Lübeck. Lübeck's citizens were afraid of the risks posed by the dumpsite. As the landfill did not have a base line, chemicals could get into the groundwater and travel below the border all the way to Lübeck. Spontaneous fires on the waste dump also threatened the quality of Lübeck's air. Members of the Green Party and activists of the local citizens' initiative protested against the double standards of the waste transports from Hesse to East Germany. The hazardous waste, which was too contentious to landfill within state boundaries, was shipped to East Germany under the Green Party's minister Joschka Fischer. Fischer embodied the desperate position that the lack of disposal infrastructure in Western countries posed to politicians. In 1986, he famously ended an open letter to justify his decision with the words "best wishes from the middle of a shithole"—knowing that he could not resolve this disposal issue in an ethical manner and at the same time deal with the urgent pressure to dispose of the Hessian hazardous waste. Exporting the hazardous waste to the other side of the inner-German border appeared the only feasible solution to the waste piling up in Hesse.

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Oil sludge covers waste pits in Röthehof, a former hazardous waste dump for Berlin and Potsdam. Unknown photographer, c. 1988.

Leaking barrels at a pharmaceutical plant in Dresden. Unknown photographer, c. 1988.

For his PhD project, team member Jonas Stuck tried to uncover this history of waste shipments across the Iron Curtain. He visited regional and federal archives as well as the archive of the German Green Party, Greenpeace International, and the Stasi state security service of East Germany. This original effort to dig up the history of a business that went on behind closed doors for almost 20 years—from the early 1970s until the fall of the Wall—showcases the double standards that are often part of the decision making by the exporting countries.

Fighting for environmental justice

Summers's memo caused a huge outcry. Economists of the 1990s thought that economic growth was the solution for environmental problems. Higher wages would not only lead to a higher demand for a "clean" environment but also create more financial resources to re-invest in environmental protection projects. They fell in line with what Indira Gandhi, the former Prime Minister of India, had already said at the United Nations Conference on the Human Environment in 1972, that poverty was the biggest polluter. In hindsight, this promise of salvation through economic growth was more a myth than a truth.

Environmental activists around the globe revealed that the hazardous waste trade was deeply rooted in (neo-)colonial patterns and exploited regional and global inequalities. Poor communities of color had to bear a vastly

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disproportionate burden of industrial activity. In the early 1990s, hazardous waste became an international symbol of contention between the Global South and industrial countries. To learn more about the power of waste, have a look at Simone Müller's virtual exhibition on "The Life of Waste ."

In the 1990s, activism and the approval of environmental legislation, such as the Basel Convention , created frameworks which tried to work against the inequalities inherent in the global waste economy. Even though the legal regulations still have loopholes through which inequalities are reinforced, they proved to be one of the biggest signs of change. Environmental justice continues to work towards the principle that all people and communities are entitled to equal protection of environmental and public health laws and regulations.

Websites linked in this text:

- http://my2.ewb.ca/site_media/static/attachments/group_topics_grouptopic/21389/LetThemEatPollution.pdf
- https://doi.org/10.5282/rcc/9152
- https://journals.sagepub.com/doi/pdf/10.1177/2399654419841063
- https://doi.org/10.5282/rcc/8452
- http://www.environmentandsociety.org/exhibitions/toxic-relationships/timeline/toxic-relationships-timeline

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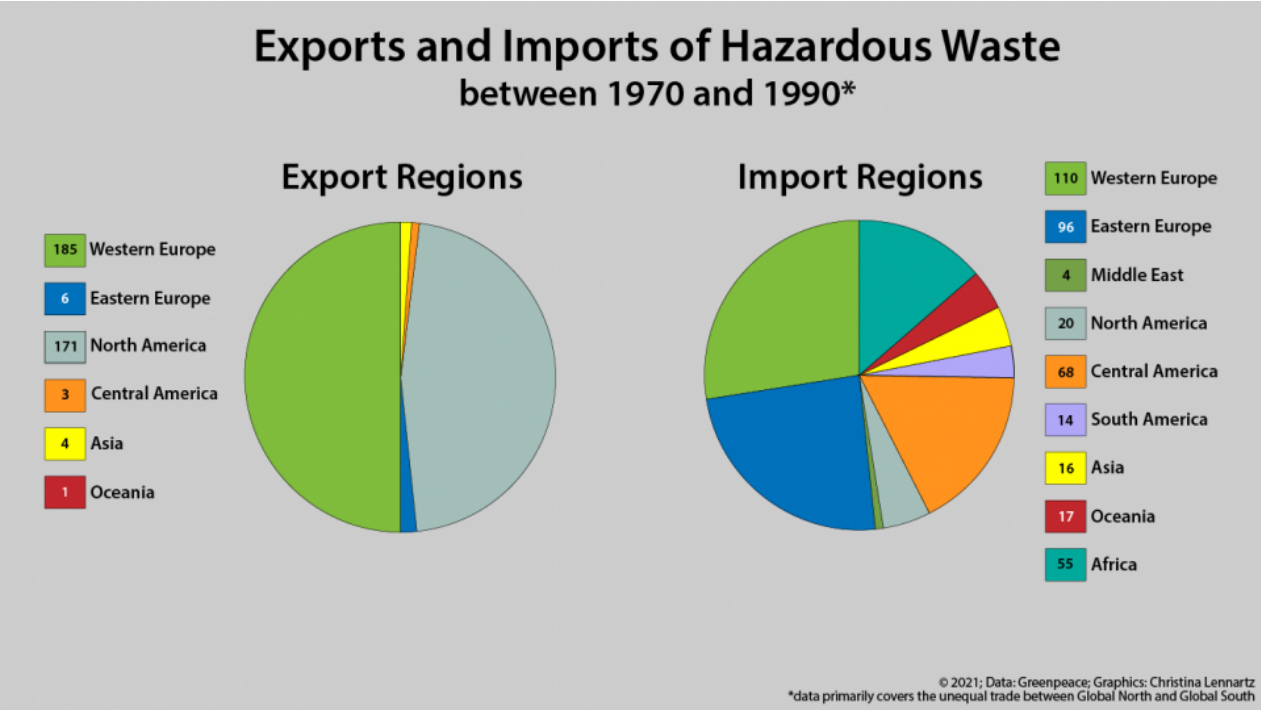
Hazardous Profits

Jack and Charles Colbert were no ordinary businessmen. The brothers were among the most famous and notorious hazardous waste traders in the history of the United States. Their business model appeared to be as simple as it was lucrative. Since the mid-1970s, the Colbert brothers bought industrial waste and surplus chemicals from chemical companies in the United States for very low prices—or even got them for free—and stored them in a network of warehouses across the country. They specialized in chemical products that had been banned in the US for sale. The Colberts bought certain poisons, unregistered pesticides, or even slightly contaminated toothpaste, and exported them to other countries instead of disposing them properly as hazardous waste. Many countries in the Global South had less stringent regulations in place, which oftentimes offered the Colbert brothers the opportunity to carry out their international trade deals with such substances legally.

Morally questionable waste deals

In what they called the "surplus chemical business," the Colbert brothers were able to "recycle" chemicals banned in the United States and send them, for instance, to Zimbabwe—where they were still legal for use in industrial production or agriculture. Although their chemical "products" were harmful and toxic, the Colbert brothers argued in favor of their business. They claimed that by exporting these materials to where they were needed and used, the world could avoid producing more of them. Additionally, they framed their waste imports as part of a development scheme, as the chemicals would be used in growing economies, thus creating jobs for people in need. US companies in turn were eager to get rid of their toxic, flammable, or carcinogenic waste through the Colberts' trade scheme, which also freed the companies from the responsibility of dealing with the waste any further. The "surplus chemical business" offered profits and advantages for everyone involved, or so it seemed. Often such business interests were the driving force behind the global waste trade.



The Greenpeace Inventory documented 34 exporting and 106 importing counties in total. The graphic illustrates the total frequency of trades. The number of exports and imports sum up unequally, which is attributed to incompleteness in the databank. The biggest exporters were the United States of America, Western Germany, and the European Economic Community (collaborated exports by several European Countries). What becomes apparent is that most exports come from North America and Western Europe, whereas imports are much more dispersed. Many of the US exports, for example, went to Central and South America or Western Europe, particularly to its occupation zone in Western Germany. Western Europe dealt with most of its waste by shipping it to Eastern Europe, particularly to Poland and East Germany, where regulations on waste disposal were not as strict. What becomes evident is that most trade happened in the Northern Hemisphere between the 1970s and 1990s. The trending trade route was not necessarily from the Global North to the Global South but from the United States, as reigning power in the West, to Europe, and from Western Europe to Eastern Europe. Only in the late 1980s did the Global South emerge as a relevant destination for importing waste.

Graph by Christina Lennartz, 2021.

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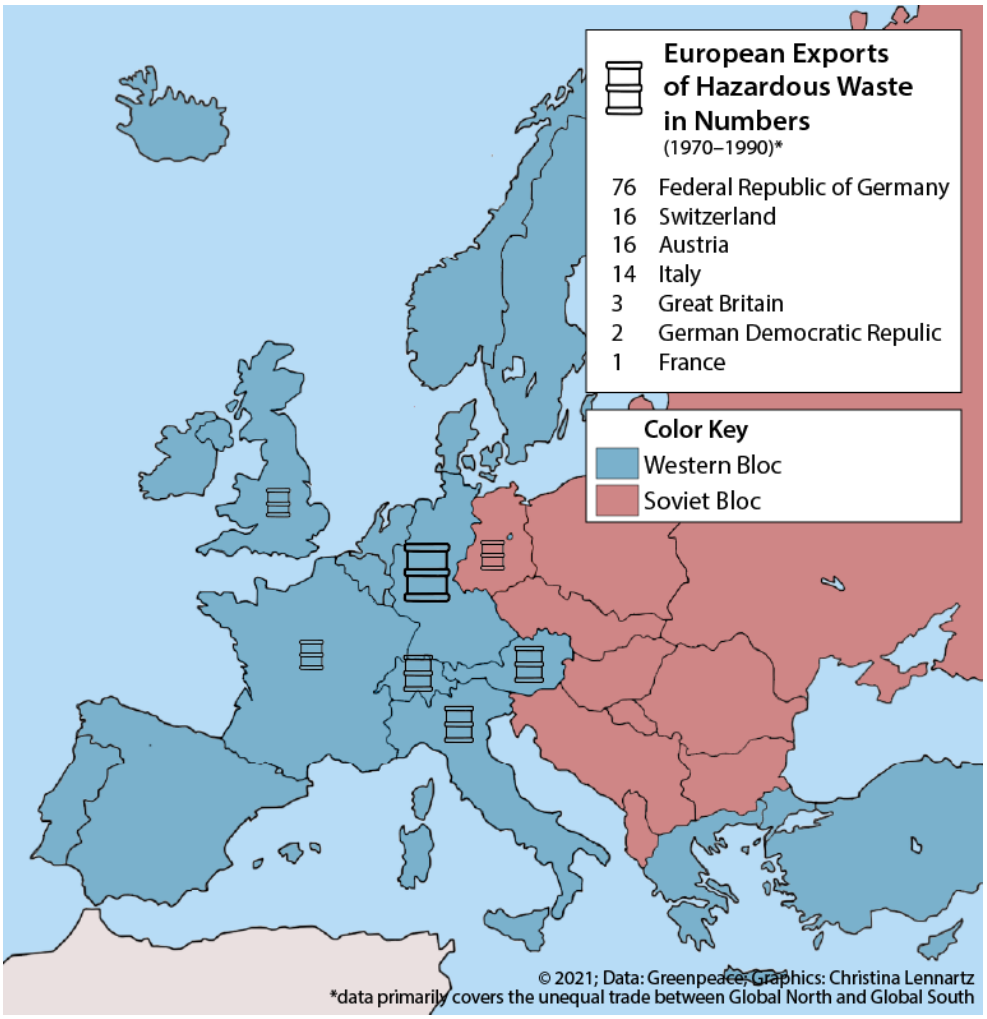

Many exports from Europe were actually a combined effort of multiple Western European countries that collaborated for a trade scheme. Additionally, trades were also executed by the European Economic Community (EEC), which was founded in 1957. The biggest European exporter was West Germany, who exported most of their waste to Poland and East Germany, as well as France. France was not documented as a big exporter of waste (only one listed export) but a large importer of waste (26 imports). Switzerland, on the other hand, was a very active exporter of waste, despite geographically being a landlocked country and relatively small in size. This could be explained by the fact that Switzerland is headquarters to many multinational corporations as well as many notable pharmaceutical and chemical companies. The Greenpeace Inventory listed East Germany as the only European exporter that was part of the Soviet Block. It exported its radioactive waste to Poland and the Soviet Union.

Graph by Christina Lennartz, 2021.

The deal with Zimbabwe was a case in point and ended up sending the Colbert brothers to jail. In 1983, they bought two types of surplus chemicals from an Ohio-based company for 60 cents a gallon and then for as much

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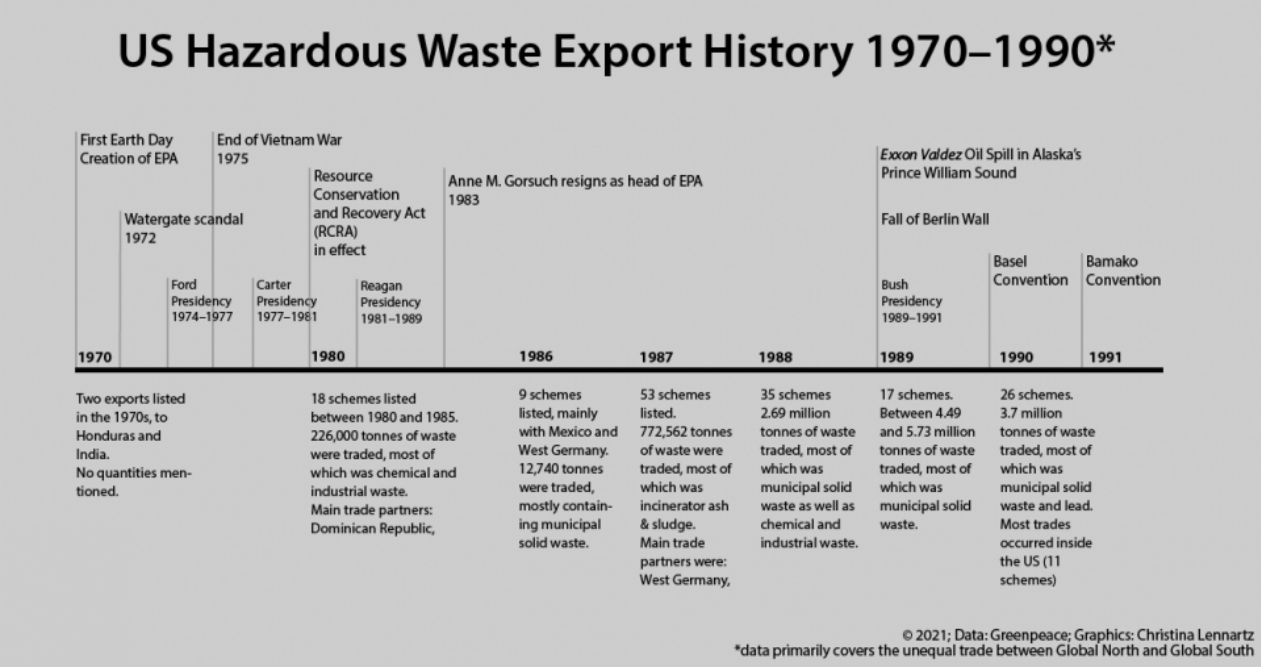
as $2.60 per gallon proceeded to sell them for use in machinery cleaning to a Zimbabwean company, which in turn paid for the chemicals through a loan given by US foreign aid. To increase their profit, the Colbert brothers had also watered-down the chemicals before shipping them off. What brought the Colbert brothers down after about 15 years in the business was this kind of fraud being discovered—not moral or environmental concerns about dealing recklessly with toxic chemicals.

The Colbert brothers were not the only ones involved in such schemes that made use of the ill-defined nature of hazardous waste. Yet, through their conviction they became the most visible. By nature, the global market in hazardous substances operated in an opaque sphere, making it difficult to actually track down its actors and their trade schemes. Lacking a global definition, numbers tracking waste produced let alone traded were hard to ascertain. Additionally, institutions to monitor the trade were only slowly established and often limited by their number of staff. When it comes to the number of trading schemes that existed prior to the 1990s, we would still be making more of an educated guess if it had not been for Greenpeace.



The United States of America are and were a global player when it comes to global hazardous waste trade, having the most documented trades (172 exports) in the Greenpeace Inventory. Most US exports occurred in 1987 (53 exports), whereas the biggest quantity of waste was exported in 1989 (4,5-5,6 million tons).

Graph by Christina Lennartz, 2021.
2021 Hazardous Travels Research Group.

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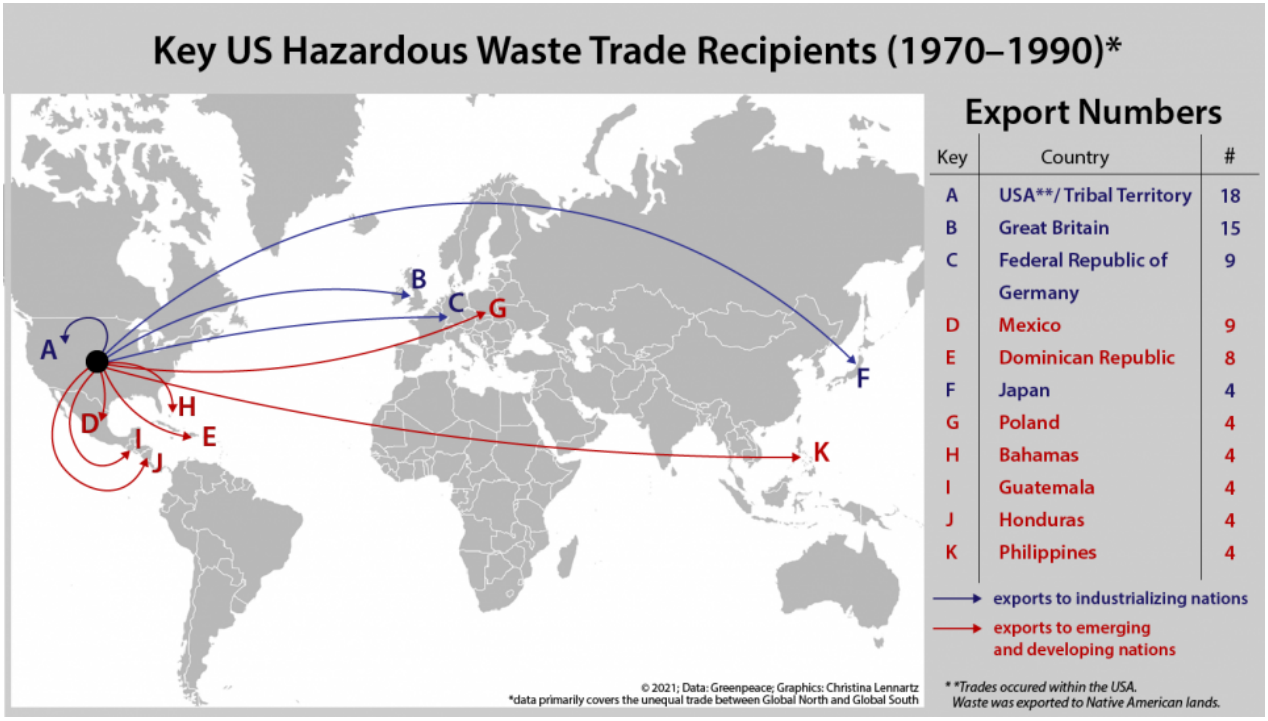

The United States' most prominent trade partners were the United Kingdom, West Germany, and Mexico. Only in the mid to late 1980s did they begin exporting to Central and South America as well as Asia. Most trades however, occurred within the United States themselves. The documented "waste exports" were shipped to Native American Lands in Alaska, Arizona, California, Mississippi, and Nevada. Interestingly enough, Canada, one of the most relevant US trade partners, was mentioned to have imported waste from the US only three times. It has to be assumed that there were more than three exports of hazardous waste from the US, indicating a possible gap in the Greenpeace Inventory. Graph by Christina Lennartz, 2021.

Tracking down the global waste trade

Greenpeace activists did the actual groundwork of rooting out a vast number of such hazardous waste deals between the 1970s and 1990s. With their Greenpeace Inventory published in 1990 and then updated in subsequent years, the NGO compiled an invaluable dataset on the international trade in hazardous wastes since the 1970s. This handbook alone documented about 400 individual trade deals, primarily between industrial countries and those then considered developing or emerging economies. And while it certainly supported Greenpeace's campaign for a ban on exporting hazardous waste, the dataset poses some challenges in the effort to fully grasp the extent and economics behind such trade schemes. Surveying and documenting the waste trade was very difficult for Greenpeace in the pre-internet era. Many deals took place on the edge of legality, while other transactions could not be executed as intended, with the waste ending up at a different destination than originally planned. Sometimes based on hearsay, Greenpeace only had the information that an export was

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planned “to some African country.” A coherent, global trade data network with export and import licenses was not yet in place, so ships could easily come and go.

The late 1980s witnessed a peak both in the total number of trades as well as the quantity of hazardous waste traded globally.

Graphs by Christina Lennartz, 2021.

By necessity, the data of the Greenpeace Inventory appeared unstructured and incomplete. For example, it contained the quantity of traded materials in all kinds of measures, ranging from tons, pounds, and gallons, to truck- and shiploads. And yet it is a treasure trove. The Inventory listed many companies, exporters, importers, and brokers involved, with a strong focus on exports from the United States and Europe. Finally, the dataset gives an impression of how many trade deals were successful, which deals failed, and the deals whose fate might remain forever unknown.

The *Hazardous Travels* research group at the Rachel Carson Center took up the challenge to get both a closer look at and a broader understanding of the global waste economy. With the goal of discovering possible trends and international waste streams, the research group visualized the data from the Greenpeace Inventory. This historical data is also essential to understanding the dynamics behind the current waste crises regarding plastics and electronic waste .

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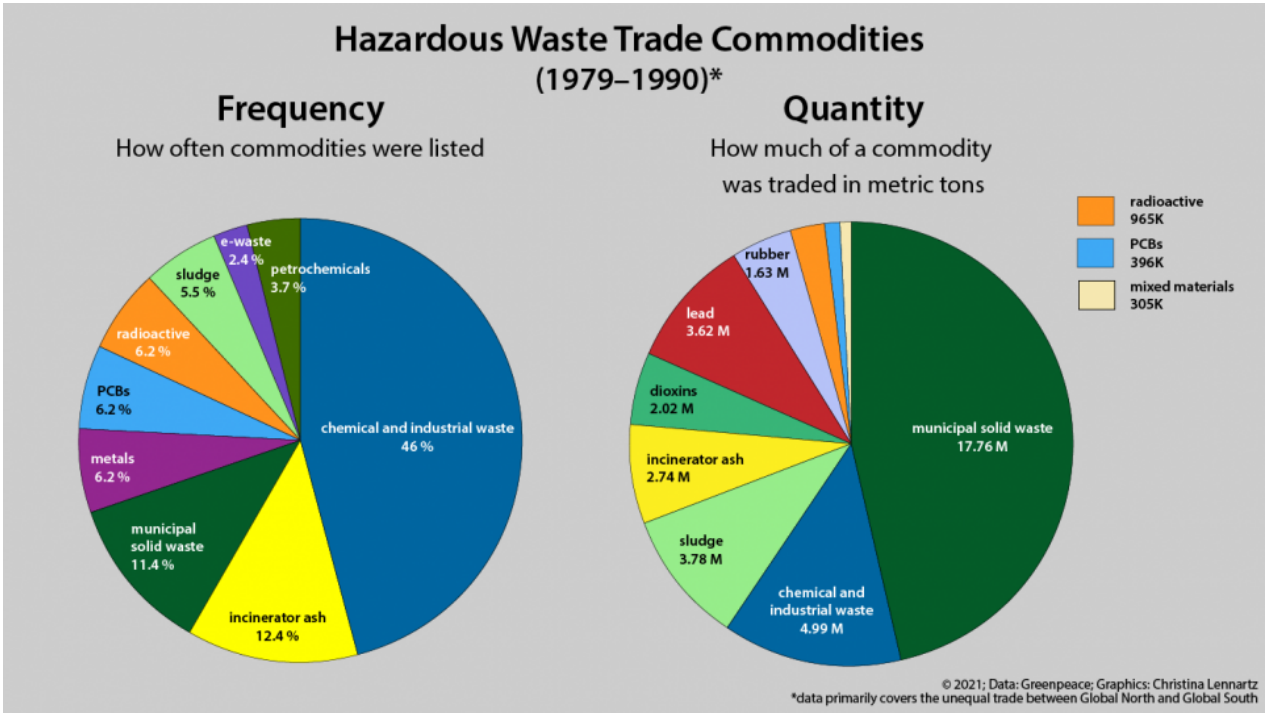

The different types of waste materials were condensed into overarching categories and were measured in tons. Traded materials were primarily chemical and industrial waste and municipal solid waste. Chemical and industrial waste contained soils and toxins, contaminated soils, and polluted water among others. Municipal solid waste contained a lot of household waste, garbage, paper, and a mixture of municipal and industrial waste. It can potentially be difficult to understand why municipal waste is seen as hazardous waste. Without proper disposal methods it can create similar harm to the environment. In addition, its composition often entails hazardous materials and chemicals, which can make it very difficult to recycle.

Graph by Christina Lennartz, 2021.
2021 Hazardous Travels Research Group.

Now, for the first time, you can have a look at the results. Where did the waste actually go? What country is the most notorious exporter? The illustrations in this chapter offer you insights into the shady world of hazardous waste trades. But watch out, there will be some toxic revelations!

Websites linked in this text:

- https://doi.org/10.1017/S0007680519000357
- http://dx.doi.org/10.13140/RG.2.2.11582.59203
- https://www.greenpeace.org/international/story/23747/its-a-waste-world/

Feichtner, Maximilian, Jonas Stuck, Ayushi Dhawan, Christina Lennartz, and Simone M. Müller. "Toxic Relationships: Uncovering the Worlds of Hazardous Waste." Environment & Society Portal, *Virtual Exhibitions* 2021, no. 1. Rachel Carson Center for Environment and Society. http://www.environmentandsociety.org/node/9273.
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Waste Governance

Every five minutes. Every single day of the year. That is how frequently a shipment of hazardous waste crosses a national frontier. The Organization for Economic Cooperation and Development (OECD) reported this mind-boggling statistic in the late 1980s, at a time when the trade of hazardous waste happened without much international oversight or regulation. Morally questionable trade deals were made behind closed doors, ships set off with their hazardous loads, and they often could only be discovered by the alert eyes of environmental activists, journalists, or affected communities. As the trade volume grew, the lack of control and data turned out to be even more dangerous. Between 1986 and 1988, for instance, 3.5 million tons of hazardous wastes had been shipped for further treatment, disposal, or recycling around the globe—mainly within OECD member countries, but also to Africa, Latin America, and Asia. This chapter discusses how the international community struggled to regulate the global waste trade, revealing an exciting story of shining milestones and dangerous loopholes.

Discussion at the 39th meeting of the parties to the London Convention and the London Protocol at the International Maritime Organization (IMO) in 2017. Unknown photographer, 2017.

Courtesy of the International Maritime Organization.
Accessed via Flickr on 21 April 2021. Click here to view source .

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The long way to regulate the waste trade: The Basel Convention

At the height of the waste trade in the 1980s, the opposition to it also gained prominence. Environmental organizations active locally and internationally, such as COHPEDA (Collectif ha tien pour la protection de l'environnement et un d veloppement alternative), Friends of the Earth, or Greenpeace, not only tried to block individual shipments, but increasingly called for instruments of global environmental governance to ban the hazardous waste trade as a whole. So far, the international community had only moved to protect the open ocean. The London Dumping Convention from 1972 aimed to control all sources of marine pollution and regulated the dumping of waste beyond territorial waters. By design, this measure was not sufficient to prevent the trade in hazardous wastes and its dumping on land. Something more substantial was needed.

The Global Environment Facility works with the government and local authorities to reduce the release of POPs from the stock piles and, wherever possible, remove the toxic substances from the Lagluja dump site, biggest collector of POPs in Georgia. Photograph by Vladimer Valishvili (UNDP), 2014.
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The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal promised to become the long-desired instrument to stop the unequal global distribution of environmental and health hazards after its adoption in 1989. A protest movement formed by Greenpeace and governments of the Global South, most prominently the Organization of African Unity (OAU), managed to almost single-handedly compel the international community to draft and sign the Basel Convention . Under the auspices of the United

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Nations Environment Programme, the convention focused on the minimization of hazardous waste generation and developed common criteria for the management of these wastes. The treaty restricted transboundary shipments where environmentally sound management was not possible, and established regulatory controls where the movement of such wastes was permissible. From the 1990s on, countries also had to provide statistics on waste production and trade, making it possible for the first time to elaborate a more accurate picture of the global waste trade. To learn more about the Basel Convention, check out *Incoherent Voices* , a research project conducted at the Rachel Carson Center. In the beginning, the Basel Convention appeared as a veritable landmark of global environmental governance.

Once put in practice, however, the Basel Convention turned out to be more contentious, as individual nations and international organizations struggled with the convention's provisions and loopholes. Its approach of restricting free trade—instead of outright banning it—failed to stop the global movement of hazardous waste. What is worse, the convention's framework actually legitimized the waste trade, as country-members simply had to inform each other about trade deals prior to making a shipment. Other issues remained unanswered, for instance, the repatriation of rejected waste: who would pay and where would unwanted material find its final disposal ground? Loopholes such as the unclear definitions of terms resulted in difficulties of enforcement and compelled waste traders to simply re-label their waste: while waste trade for disposal was restricted, recycling was very much welcome. The material hazards of the waste remained the same.

Basel was simply not enough

In response to the failures of the Basel Convention, the Organization of African Unity pushed for a stricter treaty to protect its member countries. In 1991, several African nations adopted the Bamako Convention , fully prohibiting the import of any hazardous and radioactive waste into Africa. Additionally, it imposed strict liability on hazardous-waste generation and forbade the import of substances that had been banned in the country of manufacture. Yet, once again, the Bamako Convention was not the panacea and is still not really applied throughout Africa . One of the explanations for the failure of these international agreements was the pressure from industrialized countries such as the United States, Australia, and Canada to continue the trade in hazardous waste materials and the willingness in some countries of the Global South to engage in the waste business voluntarily to benefit their economies from recyclable waste resources.

The global governance of the hazardous waste trade produced a mixed record. Still, the UN conventions also implied significant advances in protecting public health and the environment: the days of shady and covert trade deals are mostly over. Many stipulations and definitions have found their way into national laws in the European Union and many countries in the Global South. Another avenue taken to minimize the threats posed by hazardous waste consisted in outlawing particularly dangerous substances. The Stockholm Convention of 2001, for instance, aimed at eliminating the production, use, and trade of Persistent Organic Pollutants (POPs). The Basel Convention itself offers a source of tentative hope. Back in 1995, the member-countries had adopted a total ban on hazardous waste trade from OECD to non-OECD countries as an amendment—awaiting ratification by enough states. In 2019, a sufficient number of countries ratified the Basel Ban Amendment and it finally entered into force. It remains to be seen what comes of it, particularly given that the United States as the biggest producerof hazardous waste globally negotiated and signed the convention, but still refuses to ratify it.

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Waste governance timeline

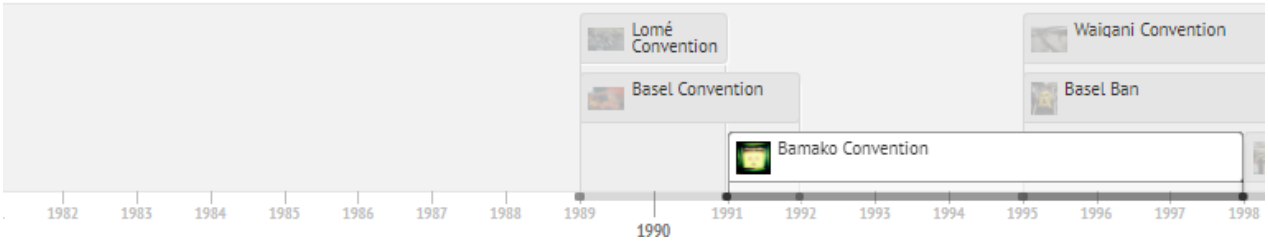
The original exhibition features an interactive timeline of the most important international agreements on hazardous waste management. View the timeline online here or view the events on the following pages.

Radioactive materials caution sign. Photo: Simon Hucko. View source.

1991 - 1998

BAMAKO CONVENTION ON THE BAN OF THE IMPORT TO AFRICA AND THE CONTROL OF TRANSBOUNDARY MOVEMENT AND MANAGEMENT OF HAZARDOUS WASTES WITHIN AFRICA, 1991 (IN EFFECT SINCE 22 APRIL 1998)

The Bamako Convention is a treaty of African nations prohibiting the import of any hazardous, including radioactive, waste into Africa. The impetus to form this convention was the failure of the Basel Convention to prohibit trade of hazardous waste to less developed countries and the realization among members of the African Union that many developed nations were exporting toxic wastes to Africa. The convention was negotiated by twelve nations of the Organization of African Unity at Bamako, Mali.



Timeline of the most important international agreements on hazardous waste management.
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Waste governance timeline: 1972 - 1975

London Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 (in effect since 1975)

The London Convention was one of the first global conventions to control all sources of pollution of the sea and protect marine environments through regulating the dumping of waste materials in the open ocean. The London Convention features a blacklist with types of hazardous waste whose dumping is entirely prohibited and a gray list of wastes that require a special permit to be disposed of in the ocean.

London Convention Meeting. Unkown photographer. View source .

Websites linked in image captions:

- https://www.flickr.com/photos/62937028@N02/37558568272

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Waste governance timeline: 1989 - 1992

Basel Convention on the Control of Transboundary Movements of Hazardous Waste and Their Disposal, 1989 (in effect since 5 May 1992)

The Basel Convention was brokered by the United Nations Environment Programme, and its principal focus is on the minimization of hazardous waste generation. The Basel Convention aims at the development of criteria for environmentally sound management of these wastes wherever the place of disposal. The Convention's goal is to restrict the transboundary shipment of hazardous wastes where environmentally sound management is not possible, and the elaboration of regulatory controls on the movement of such wastes across international frontiers where permissible. The world's largest producer of hazardous waste, the US, has yet to ratify the Basel convention.

Acetylene Cutting Torch, Shipbreaking at Alang Shipyards in India. Photo: Adam Cohn. View source .

Websites linked in image captions:

- https://www.flickr.com/photos/adamcohn/21318878189/in/photolist-yJucy2-yrTqVw-ytSPKk-yLoFya

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Waste governance timeline: 1989 - 1991

Lomé IV Convention, 1989 (in effect since 1 September 1991)

This treaty was negotiated between the European Union and the 69 countries of the African, Caribbean, and Pacific (ACP) member states. It prohibits the ACP group from importing hazardous and radioactive waste, and prevents the European Community from exporting hazardous wastes to ACP member states.

Discarded Pesticide Cans. Photo: Gene Daniels. View source .

Websites linked in image captions:

- https://commons.wikimedia.org/wiki/File:DISCARDED_PESTICIDE_CANS_-_NARA_-_542494.jpg

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Waste governance timeline: 1991 - 1998

Bamako Convention on the Ban of the Import to Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa, 1991 (in effect since 22 April 1998)

The Bamako Convention is a treaty of African nations prohibiting the import of any hazardous, including radioactive, waste into Africa. The impetus to form this convention was the failure of the Basel Convention to prohibit trade of hazardous waste to less developed countries and the realization among members of the African Union that many developed nations were exporting toxic wastes to Africa. The convention was negotiated by twelve nations of the Organization of African Unity at Bamako, Mali.

Radioactive materials caution sign. Photo: Simon Hucko. View source .

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- https://www.flickr.com/photos/36373260@N00/4646439344

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Waste governance timeline: 1995 - 2001

Waigani Convention, 1995 (in effect since 21 October 2001)

The Waigani Convention is a regional agreement under the 1989 Basel Convention. It applies the strict controls of the Basel Convention to the South Pacific area, and ensures that hazardous waste cannot travel from New Zealand or Australia to another Pacific country or to Antarctica. The objective of the Waigani Convention is to reduce and eliminate transboundary movements of hazardous and radioactive waste, to minimize the production of hazardous and toxic wastes in the Pacific region, and to ensure that disposal of wastes in the Convention area is completed in an environmentally sound manner.

Ditch in Waigani, Papua New Guinea. Photo: Michael Johnson. View source .

Websites linked in image captions:

- https://www.flickr.com/photos/94937042@N00/48476384887

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Waste governance timeline: 1995 - 2019

Ratification of Basel Ban Amendment, 1995 (in effect since 5 December 2019)

This amendment to the Basel Convention puts forward an outright ban on exporting hazardous waste as defined by the Convention from any OECD or EU country to other countries. Such wastes include most types of heavy metals, POPs, electronic wastes, and also obsolete vessels. The ban amendment will contribute to the protection human health and the environment from pollution and an increase in occupational safety in many countries around the world.

Greenpeace protest banner reading “Danger! Basel Convention legalizes toxic terror!”
Photo: Zelda MacGregor, 2014.

Websites linked in image captions:

- https://flic.kr/p/p5Dhmn

Waste governance timeline: 1998 - 2004

Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, 1998 (in effect since 24 February 2004)

This multilateral treaty is designed to facilitate informed decision-making by countries with regard to trade in hazardous chemicals that have been banned or severely restricted in party countries. The Rotterdam Treaty establishes a prior informed consent procedure to ensure that restricted hazardous industrial chemicals and pesticides are not exported to countries that do not wish to receive them.

Trash cans for mercury polluted waste. Photo: Patrizia Cocca. View source .

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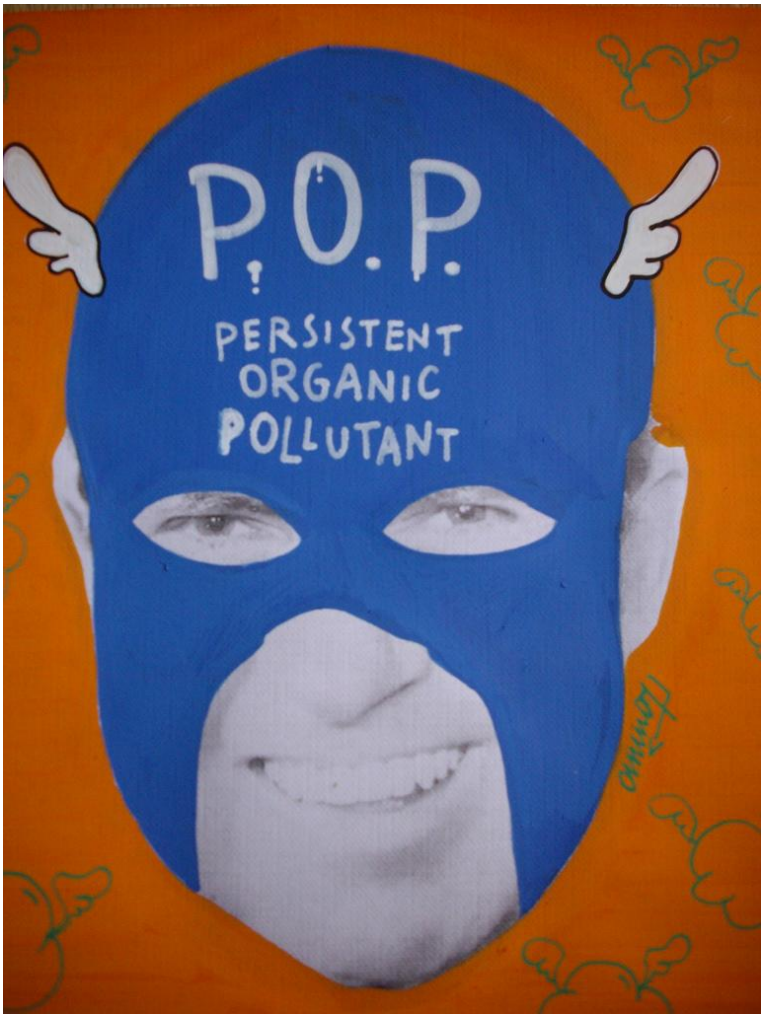
Waste governance timeline: 2001 - 2004

Stockholm Convention on Persistent Organic Pollutants, 2001 (in effect since 17 May 2004)

This environmental treaty on Persistent Organic Pollutants (POPs) aims at eliminating their production, use, trade, release, and storage. POPs are defined as chemical substances that persist in the environment, bio-accumulate through the food web, and pose a risk of causing adverse effects to human health and the environment. The US has yet to ratify the Stockholm convention.



Graffity of Nixon and Persistent Organic Pollutants. Photo: omino71. View source .

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Case study: Shipbreaking

Workers at a shipbreaking yard. Illustration by Christian Mayer, 2021.

The fate of end-of-life vessels illustrates the successes and setbacks of international waste governance. Have you ever stood in awe in front of a cruise or cargo ship towering high above you? Maybe you wondered what would happen to it once it was old and no longer seaworthy? You might not have guessed that such an obsolete ship has to be considered hazardous waste. Ships are not just floatable masses of steel; they are assemblages of a variety of materials. Vessels built before the 1980s, in particular, were built with dangerous substances ranging from asbestos and heavy metals to radioactive materials. And that is why end-of-life ships fall under the scope of the Basel Convention.

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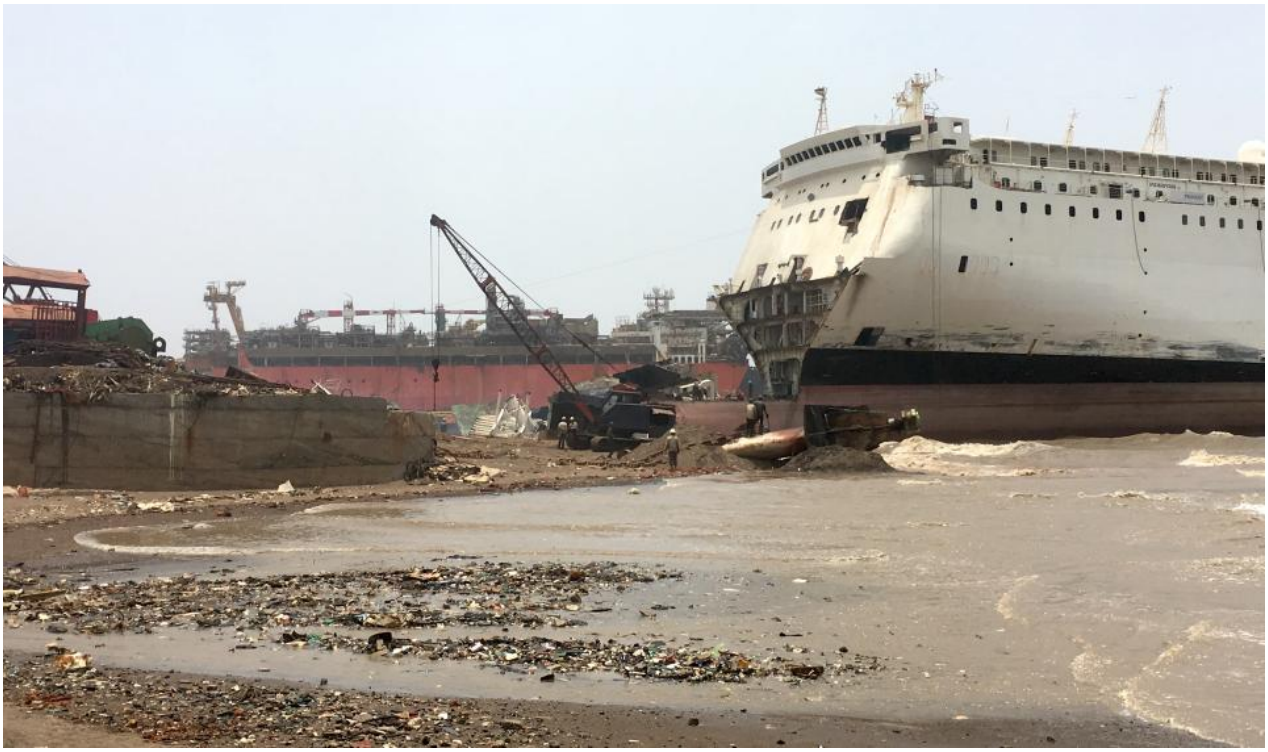
The hazardous nature of ships creates a controversy once they have to be dismantled or "broken." The huge amounts of steel can be recycled and remains a valuable resource in emerging economies. The toxic elements onboard, however, need to be handled with the greatest care. Many ship owners try to minimize the costs for getting rid of their outdated vessels and send them to giant shipbreaking yards in South Asia. The 10 kilometer long beach of Alang, once a tiny fishing village in the Indian state of Gujarat, is now home to one of the world's largest shipbreaking industries (Demaria, 2010). So far, almost 8000 ships have been beached and dismantled at Alang's yards—with upward tendency. The ongoing trade with end-of-life ships, however, threatens the health of thousands of workers at such shipbreaking yards in India, Bangladesh, and Pakistan.



Shipbreaking in progress, with a cut being made on the nose of the ship in Alang, Gujarat. Photograph by Ayushi Dhawan, 2018.

In some cases, international regulations have been effective in preventing the dumping of toxic ships. Let us have a look at the *Sandrien*, a giant chemical tanker. Port authorities in Amsterdam arrested the *Sandrien* as it prepared to leave for India in 2001—supposedly for demolition. The arrest was made because its owner, Upperton Limited, had failed to give notice according to EU regulations. The Basel Convention had already been transposed into the European Union Waste Shipment Regulation . The ship owner, in his defense, claimed in court that the operational vessel was not waste at the time of its arrest. According to the judgment, however, the impending journey of *Sandrien* was the first step towards illicit traffic and a violation of the Basel

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Convention's provisions. Three years later, as the ship owner remained untraceable, the Dutch government paid 2 million euros to a Dutch ship dismantling company , to get rid of the vessel docked at the port, waiting for its end.

Sandrien is one successful example of environmental justice, but there are many more ships that escape the watchful eye of port authorities. An average of 700 ships are sent for demolition every year —oftentimes not in a safe and clean manner. The regular export ships to non-OECD countries for demolition highlights the practical difficulties in implementing the Basel Convention. Ship owners continue to take advantage of the prevailing loopholes in the international regulatory system and export contaminated vessels laden with hazardous materials to the shipbreaking yards in South Asia for recycling.

Websites linked in this text:

- http://www.basel.int/TheConvention/ConferenceoftheParties/Meetings/COP1/tabid/6154/Default.aspx
- http://www.basel.int/TheConvention/Overview/tabid/1271/Default.aspx
- http://doi.org/10.1093/acprof:oso/9780198259947.001.0001
- https://www.unep.org/explore-topics/environmental-rights-and-governance/what-we-do/meeting-international-environmental
- https://www.afrik21.africa/en/africa-bamako-convention-on-hazardous-wastes-22-years-on/
- http://www.pops.int/TheConvention/Overview/tabid/3351/Default.aspx
- http://www.environmentandsociety.org/mml/asbestos-inside-and-outside-toxic-and-haptic
- https://ec.europa.eu/environment/topics/waste-and-recycling/waste-shipments_en
- http://coordination-maree-noire.eu/~Salagnac/spip.php?article876&lang=es&var_mode=calcul
- https://www.fidh.org/IMG/pdf/bd1112a.pdf

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Hazardous Hope

An abandoned wellhead in the Ecuadorean Amazon, which is slowly being reclaimed by the rainforest. Photograph by Theresa Leisgang, 2018.

When you discover the histories and legacies of hazardous waste around the world, it is hard not to let a sense of despair creep in. Too many humans and more-than-humans have died bearing a burden that did not correspond to them, while others shipped their waste away—out of sight, out of mind. Yet, the history of hazardous waste would not be complete without the inspiring stories of resistance and resilience born out of the fight against the toxic materiality of other people's waste. Local and international activist movements achieved much more than making waste disposal fairer and more sustainable. They can offer a sense of hope—a hazardous hope, that is.

Community resistance from Love Canal to Haiti

Initially, local initiatives spearheaded the resistance against landfills for hazardous waste and incinerators. Community residents were the first to notice the devastating public health effects of waste management infrastructure, yet their concerns were often not taken seriously by government officials and company owners. In the United States, Love Canal became an emblematic case that would change the legal framework for dealing with hazardous sites. Once the residents of this neighborhood in the vicinity of the Niagara Falls realized that

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they had been living on top of an abandoned hazardous waste dump for decades, they launched a protest that finally caught the attention of national media and the federal government in the 1970s. As a far reaching repercussion to the benefit of other marginalized communities, the US Congress passed the Superfund Act in response to the Love Canal incident, paving the way for remedial actions at heavily contaminated sites across the country.

The former metal smelter of the Halaco Engineering Company in California is one of more than 1300 Superfund sites in the United States that are slowly getting cleaned up. The metal and radioactive waste at this site contaminates the adjacent Ormond Beach wetlands. Photograph by Wendell Ward, 2009.

The global waste trade turned the hazardous garbage from North American cities into a problem in other countries as well. In response, local activists in Haiti, for instance, joined forces to fend off shipments with incinerator ash from Philadelphia destined for the port of Gonaïves. At a point when this supposedly hazardous waste had already been partly dumped on the island, Haitian radio stations helped to publicize and politicize the incident in 1988. Independent stations such as *Radio Haiti-Inter* and their prominent news anchor Jean Dominique served both as a network for information dissemination and as a channel for the initiation of protest. By alerting both Haitians throughout the country and foreigners to the cause of "*déchet toxique*"—toxic waste—Radio Haiti-Inter played a major role in turning Haitians against the US waste traders. Such forms of self-empowerment raised public awareness of problems ignored by elites and had very tangible effects: the incinerator ash was removed and disposed of in a sealed landfill.

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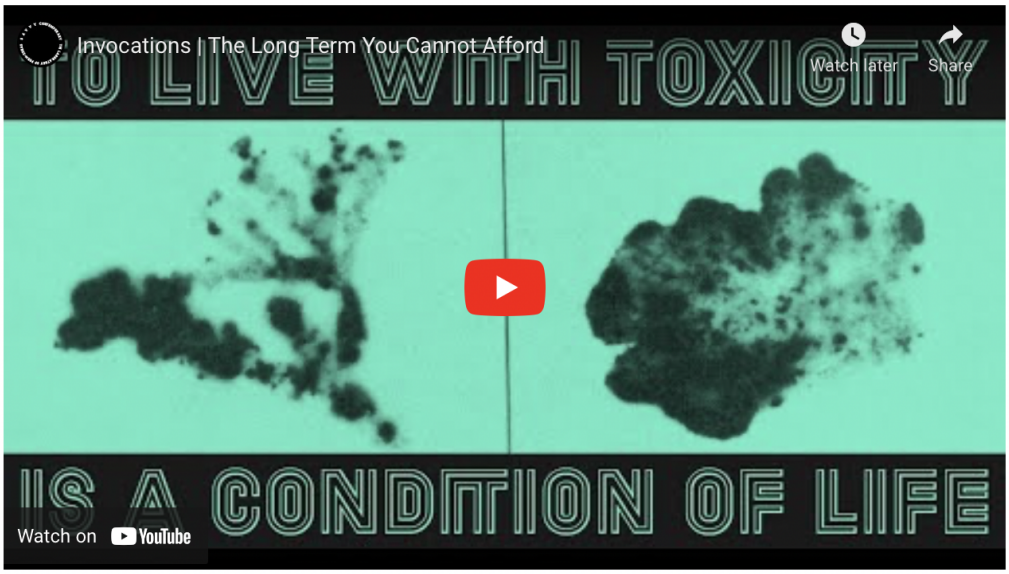
The involvement of environmentalist NGOs further internationalized such local protests to effectively counter the global operations of waste traders. Greenpeace launched its Global Toxic Trade Campaign in the late 1980s, catching the attention of media outlets around the world. Andreas von Bernstorff was a crucial figure behind this successful campaign by Greenpeace—do not miss his stories in an exclusive interview with Jonas Stuck (in German). Together, this global environmental alliance managed to bring a process to conclusion that for a decade had been stalling in dusty backrooms populated by toothless administrators: the creation of an internationally binding regulatory system for the trade in hazardous waste material in the form of the United Nations' Basel Convention. Notwithstanding their flaws, such regulatory frameworks provided more control for affected countries and, in the end, helped to prevent unsuspecting communities from suddenly being buried in other people's hazardous waste.

> The original exhibition includes the film "The Long Term You Cannot Afford" by SAVVY Contemporary, with artistic interventions, music, and poetry all related to toxicity. The event kicked off with a talk by Simone Müller. View the film online here: https://youtu.be/a47oOUc4YFY .



Toxic commons and the arts

The arts are, alongside activism and investigative journalism, another source for hope in exposing dubious deals in the world of hazardous waste. The Nigerian poet and screenwriter Ken Saro-Wiwa of the ethnic group of the Ogoni ended up giving his life denouncing the environmental catastrophe brought upon his homeland by the Shell oil company. His written testimonies and nonviolent protests made a difference in an unequal fight against the oil company's neglectful waste management in the form of countless oil spills and air pollution through gas flaring. After he was executed by the military dictatorship in 1995, his children continued his legacy. His daughter Zina Saro-Wiwa , for instance, is an engaged visual artist herself. In her video and photographic works, she combines the cultural heritage of her people with the toxic imprint of the oil industry in the Niger delta. Instead of limiting herself to the stories of doom readily available in Ogoniland, Zina Saro-Wiwa encourages her audiences to see hope and possibilities in the ruins.

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The original exhibition features an interactive gallery of images of inspiring actors fighting hazardous waste. View the images on the following pages.

Inspiring actors fighting hazardous waste

Andreas Graf von Bernstorff (*1945) is a German politician of the Green Party turned activist who became Greenpeace's spokesperson on the campaign against the export of hazardous waste since the late 1980s. He played a crucial role in paving the way for the UN Basel Convention, which for the first time regulated the global trade in hazardous waste. Bernstorff advocated for ecologically sound disposal practices while holding producers accountable. He led several "return-to-sender" campaigns that forced the initiators of shady waste deals to take back the toxic waste dumped on other countries. Click here to learn more .

Illustration by Jonas Stuck, 2021.

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Erin Brockovich (*1960) is an environmental activist and consumer advocate who fights for safe drinking water in the United States. She became famous after uncovering the serious public health issues deriving from toxic wastewater discharged by the Pacific Gas & Electric Company in a town in southern California. Working as a legal clerk, she initiated a successful lawsuit that was turned into a movie starring Julia Roberts. On her website, Brockovich initiated the "Community Healthbook," allowing citizens to self-report issues with their drinking water. Click here to learn more .

Illustration by Jonas Stuck, 2021.

Feichtner, Maximilian, Jonas Stuck, Ayushi Dhawan, Christina Lennartz, and Simone M. Müller. "Toxic Relationships: Uncovering the Worlds of Hazardous Waste." Environment & Society Portal, *Virtual Exhibitions* 2021, no. 1. Rachel Carson Center for Environment and Society. http://www.environmentandsociety.org/node/9273.
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Ideonella sakaiensis is a bacterium first discovered outside a plastic bottle recycling factory in the port city of Sakai, Japan in 2016. As the first bacterium capable of breaking down polyethylene terephthalate plastic (PET), *Ideonella sakaiensis* might help in the fight against plastic waste pollution. It evolved a specific enzyme that releases the carbon in PET as a food source for the bacterium. Beside *Ideonella sakaiensis*, many types of bacteria have been shown to thrive on a waste diet, including nuclear waste. Click here to learn more .

Illustration by Jonas Stuck, 2021.

Feichtner, Maximilian, Jonas Stuck, Ayushi Dhawan, Christina Lennartz, and Simone M. Müller. "Toxic Relationships: Uncovering the Worlds of Hazardous Waste." Environment & Society Portal, *Virtual Exhibitions* 2021, no. 1. Rachel Carson Center for Environment and Society. http://www.environmentandsociety.org/node/9273.

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Kenule Beeson "Ken" Saro-Wiwa (*1941; †1995) was a renowned civil and environmental rights activist, writer, and television producer in Nigeria. As president of the Movement for the Survival of Ogoni People (MOSOP), Saro-Wiwa spearheaded a peaceful and successful movement that resisted the reckless oil exploitation in his homelands by Royal Dutch Shell. In 1995, the military dictatorship had Saro-Wiwa executed along with several other Ogoni leaders. His assassination provoked international outcry and finally drew wide attention to the environmental disaster in Ogoniland. Click here to earn more .

Illustration by Jonas Stuck, 2021.

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Gopal Krishna is an Indian journalist, lawyer, and editor of the online journal *Toxic Watch Journal*. His petitions demanding clean and safe recycling of end-of-life vessels went to the Supreme Court, the highest judiciary body in India. His activism resulted in several ships—that had not been cleaned of asbestos and other hazardous substances before arrival—being sent back to their places of origin, such as the French aircraft carrier *Le Clemenceau*. Click here to learn more .

Illustration by Jonas Stuck, 2021.

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The Basel Action Network (BAN) is an NGO founded by Jim Puckett in 1997. Ban's mission is to end the global trade with hazardous waste to realize everyone's right to a clean environment. BAN is committed to strengthening and promoting its namesake, the UN Basel Convention, currently focusing on three major waste streams: electronic waste, plastic pollution, and shipbreaking. BAN keeps an eye on companies exporting hazardous waste and successfully lobbied countries such as Thailand to ban the import of e-waste. Click here to learn more.

Illustration by Jonas Stuck, 2021.

And hope is one way forward to coping with life in a toxified world. The intergenerational and international acts of awareness and resistance of the Saro-Wiwas and so many others not only rely on hopeful narratives, but can become the substance of hopeful stories themselves. In times when personal, academic, and media stories are full of decline, such hopeful narratives help, to some extent, to counterbalance the omnipresent doom of environmental storytelling. On a more personal note, researching the many negative aspects of the waste

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economy for many years, we as researchers look out for more hopeful stories that could contradict the usual fatalistic narratives. Hopeful narratives can be told to inspire action instead of extinguishing it and, in this sense, are not seen as a naive solution to a complex problem but rather a call for further engagement with the subject.

Understanding that toxicity has become a shared—however unevenly—predicament as it permeates bodies and borders can be a step towards more environmental justice globally. As Environmental Humanities scholars we call for a sense of shared responsibility borne out of the acceptance of the global communality of toxic exposure: there are toxic chemicals in our bodies no matter who we are and where we come from. The *Hazardous Travels* research group calls this state of the world and this state of mind the "toxic commons ." Yet, this shared reality of contamination remains highly unequal. Some communities share a deadlier burden than others; in fact, they have been transformed into dumping sites for the wellbeing of others. Listening to, speaking, and thinking with particularly burdened communities offers ways to understand and support practices of care and resistance to find ways of living within the toxic commons. Working towards local resilience and empowerment of especially affected communities can remediate at least part of the historical injustices inflicted by hazardous waste dumping. The toxic commons also carry a political message, especially for the privileged, better-off, and less-polluted. The shared conditions call everyone to care nor only for what is close to them, but for what could be close to anyone, everywhere.

Websites linked in this text:

- http://savvy-contemporary.com/
- https://youtu.be/a47oOUc4YFY
- https://savvy-contemporary.com/
- http://www.zinasarowiwa.com/
- https://medium.com/digital-earth/toxic-bonds-2cc5d5c6a865

Websites linked in image captions:

- https://www.flickr.com/photos/68842954@N00/4097597931
- https://bernstorff-camp.de/index.php
- https://www.brockovich.com/
- https://seeingthewoods.org/2018/11/20/new-hope-for-plastic-waste-pollution
- https://www.rightlivelihoodaward.org/laureates/ken-saro-wiwa-movement-for-the-survival-of-the-ogoni-people/
- http://www.toxicswatch.org/
- https://www.ban.org/

Feichtner, Maximilian, Jonas Stuck, Ayushi Dhawan, Christina Lennartz, and Simone M. Müller. "Toxic Relationships: Uncovering the Worlds of Hazardous Waste." Environment & Society Portal, *Virtual Exhibitions* 2021, no. 1. Rachel Carson Center for Environment and Society. http://www.environmentandsociety.org/node/9273.
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Toxic Inheritance: A Graphic Essay

The graphic essay *Toxic Inheritance* by anthropologist Amelia Fiske in collaboration with graphic designer Jonas Fischer gives intimate insights into the effects of oil extraction in the Ecuadorean rainforest. Based on Fiske's ethnographic PhD project, the essay visualizes the different types of hazardous waste emitted by the oil industry in the Ecuadorean Amazon, ranging from oil spills to gas flaring. Get to know what toxicity means to people living just on top of oilfields in the middle of the rainforest.

Feichtner, Maximilian, Jonas Stuck, Ayushi Dhawan, Christina Lennartz, and Simone M. Müller. "Toxic Relationships: Uncovering the Worlds of Hazardous Waste." Environment & Society Portal, *Virtual Exhibitions* 2021, no. 1. Rachel Carson Center for Environment and Society. http://www.environmentandsociety.org/node/9273.

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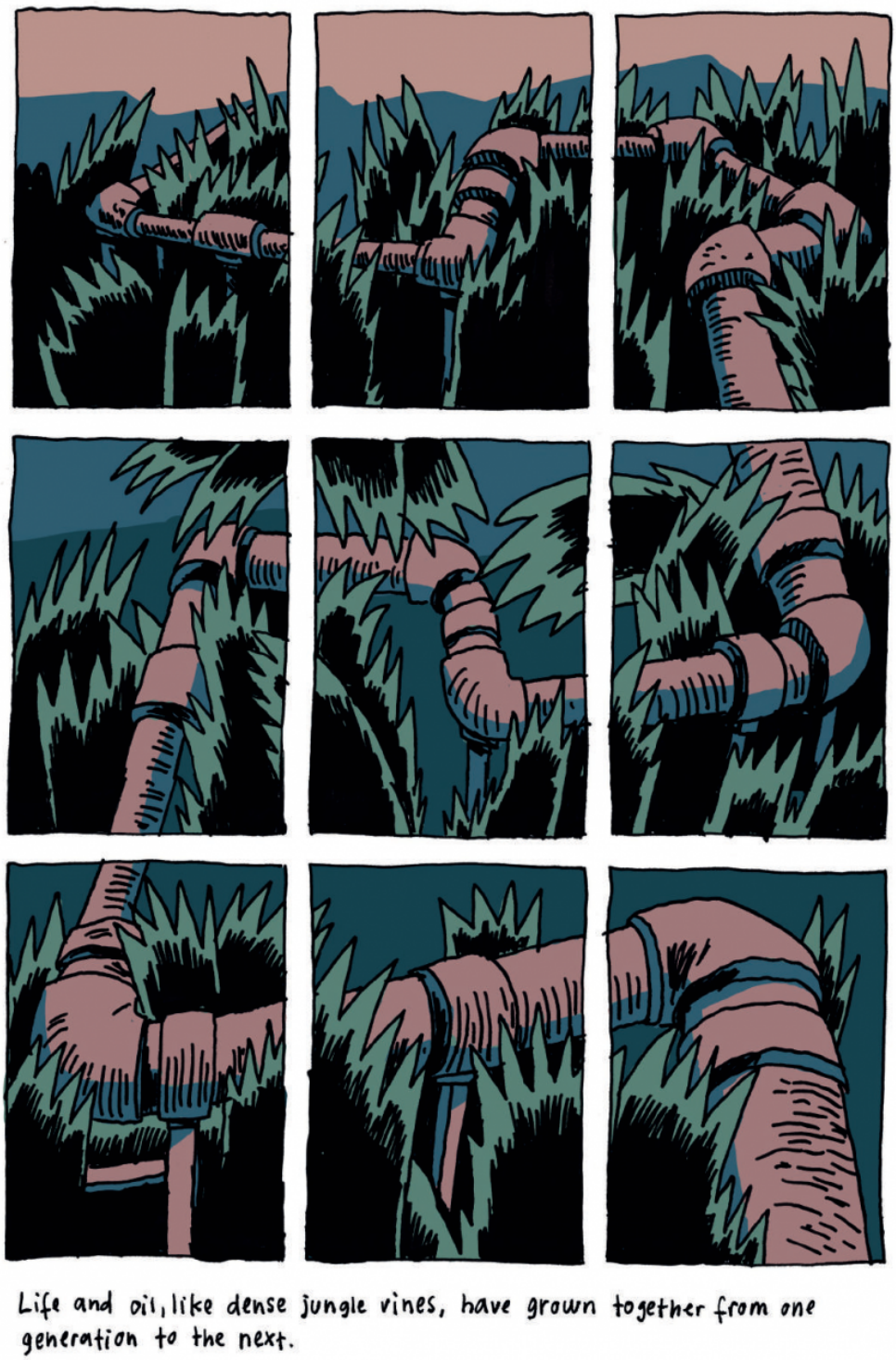

Feichtner, Maximilian, Jonas Stuck, Ayushi Dhawan, Christina Lennartz, and Simone M. Müller. "Toxic Relationships: Uncovering the Worlds of Hazardous Waste." Environment & Society Portal, *Virtual Exhibitions* 2021, no. 1. Rachel Carson Center for Environment and Society. http://www.environmentandsociety.org/node/9273.

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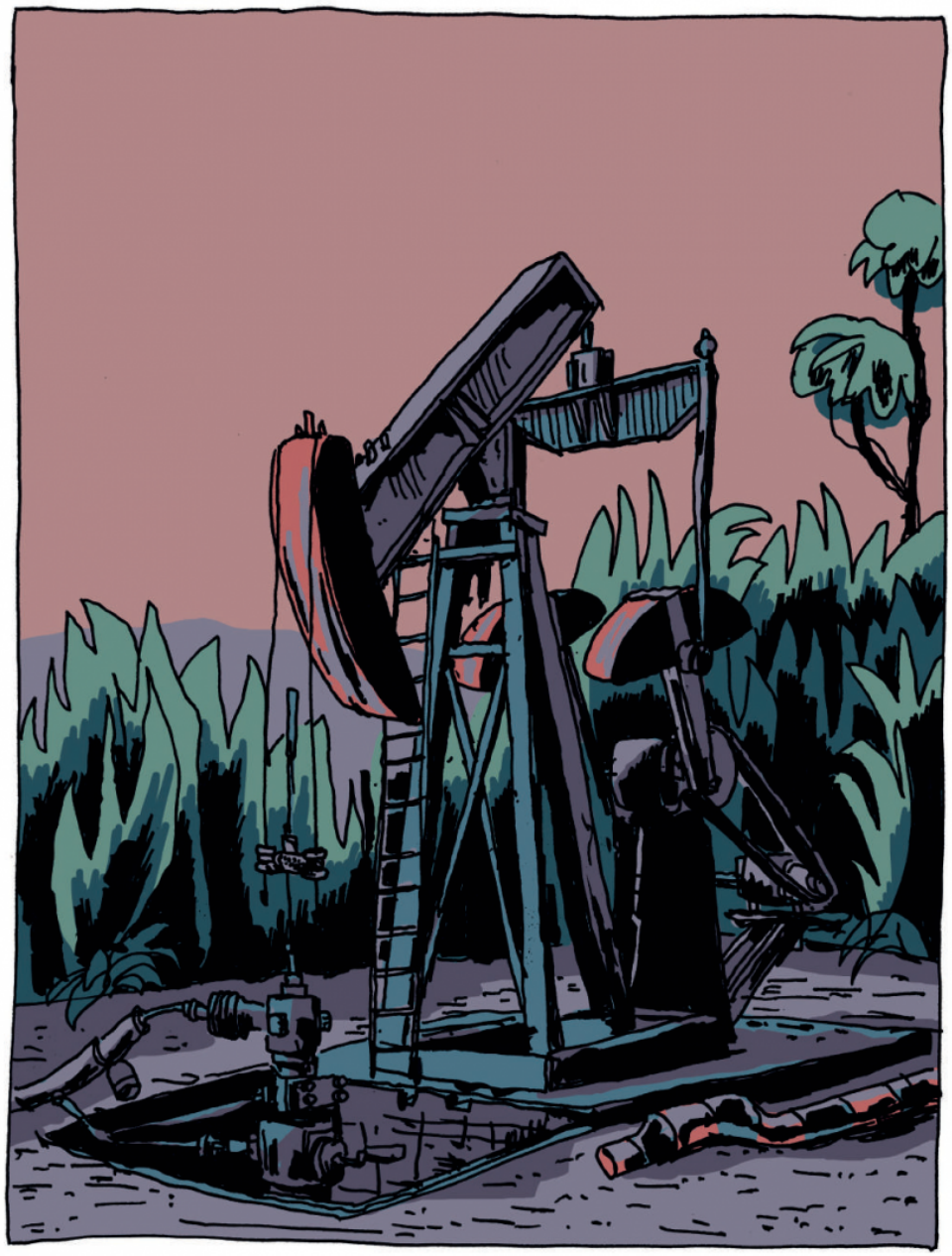

Feichtner, Maximilian, Jonas Stuck, Ayushi Dhawan, Christina Lennartz, and Simone M. Müller. "Toxic Relationships: Uncovering the Worlds of Hazardous Waste." Environment & Society Portal, *Virtual Exhibitions* 2021, no. 1. Rachel Carson Center for Environment and Society. http://www.environmentandsociety.org/node/9273.

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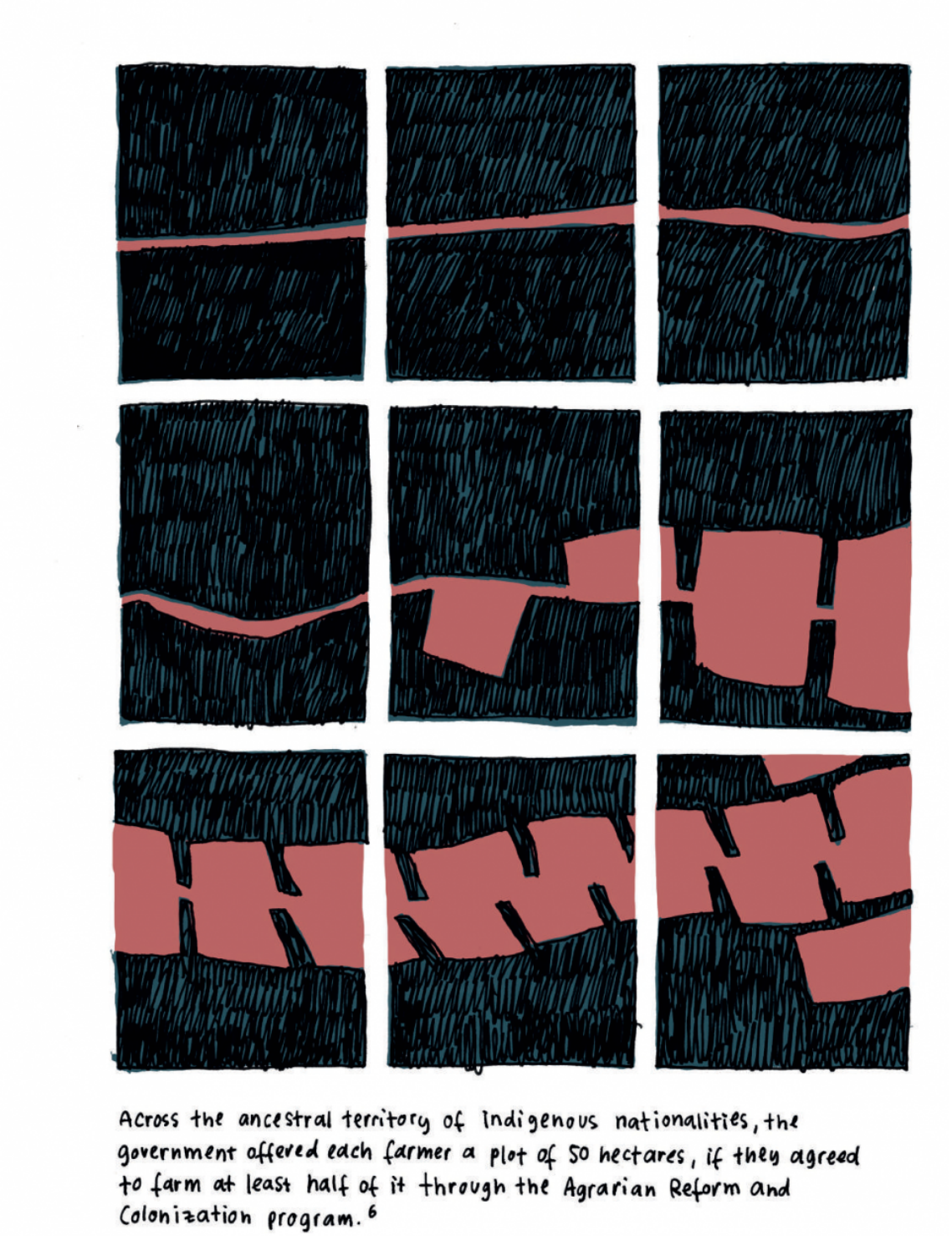

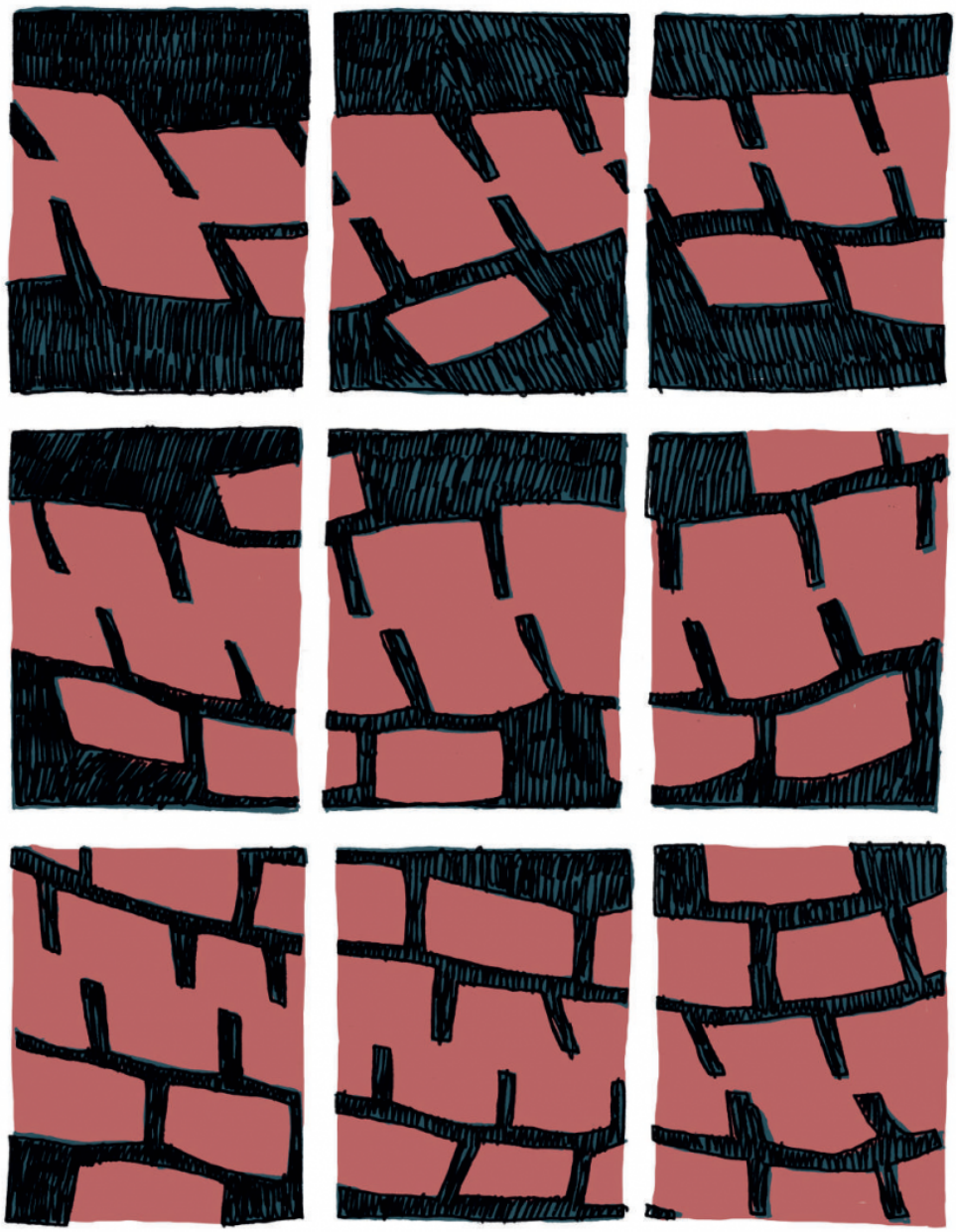

The state company advertises "State of the art technology" that guarantees minimal environmental impact, promising a future with oil free from the harm that accompanied previous operations.[7]

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Chapter: *Toxic Inheritance*: A Graphic Essay
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PDF created on: 17 June 2021 10:28:59

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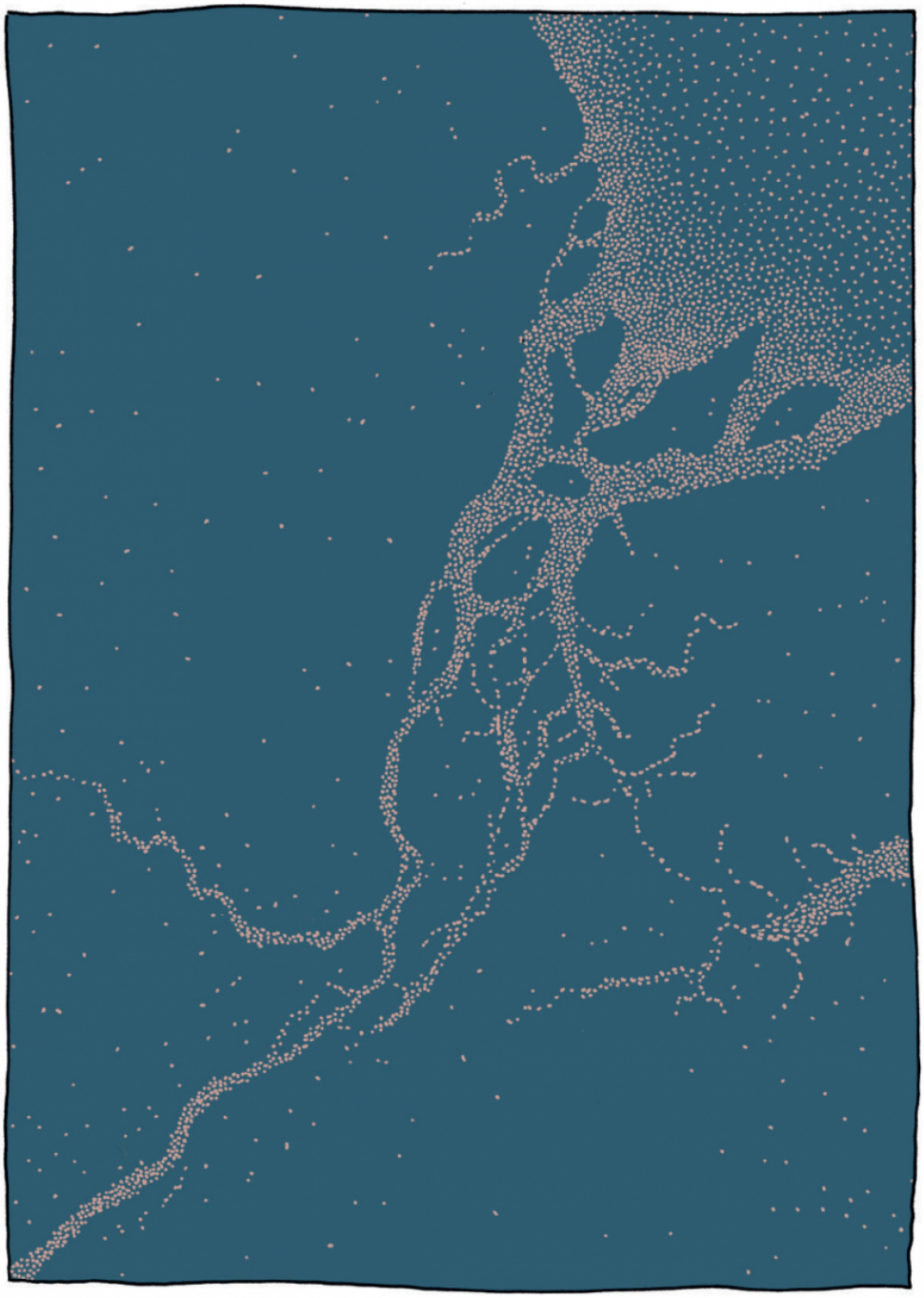

Feichtner, Maximilian, Jonas Stuck, Ayushi Dhawan, Christina Lennartz, and Simone M. Müller. "Toxic Relationships: Uncovering the Worlds of Hazardous Waste." Environment & Society Portal, *Virtual Exhibitions* 2021, no. 1. Rachel Carson Center for Environment and Society. http://www.environmentandsociety.org/node/9273.

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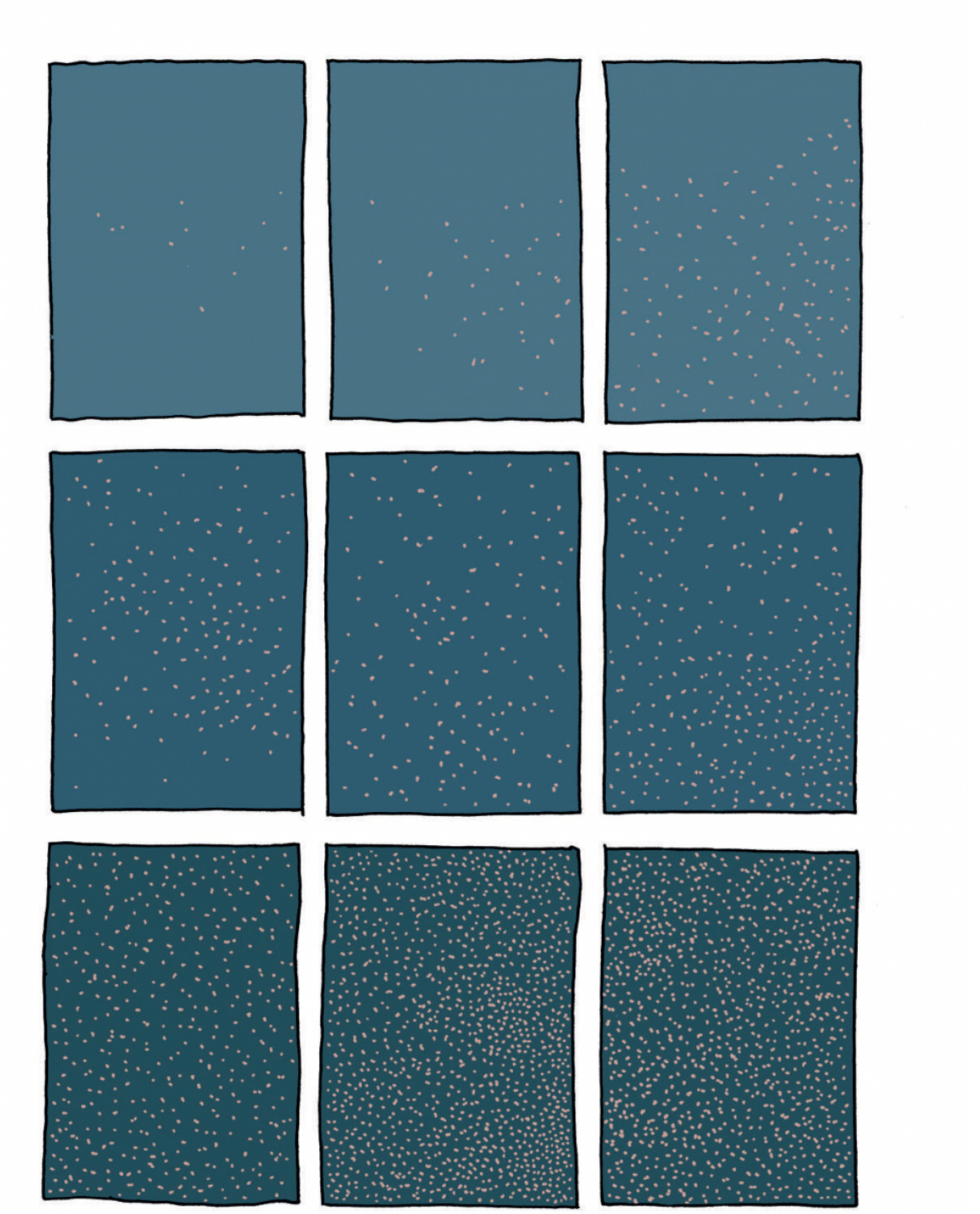

Feichtner, Maximilian, Jonas Stuck, Ayushi Dhawan, Christina Lennartz, and Simone M. Müller. "Toxic Relationships: Uncovering the Worlds of Hazardous Waste." Environment & Society Portal, *Virtual Exhibitions* 2021, no. 1. Rachel Carson Center for Environment and Society. http://www.environmentandsociety.org/node/9273.

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PDF created on: 17 June 2021 10:28:59

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Chapter: *Toxic Inheritance*: A Graphic Essay
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PDF created on: 17 June 2021 10:28:59

Feichtner, Maximilian, Jonas Stuck, Ayushi Dhawan, Christina Lennartz, and Simone M. Müller. "Toxic Relationships: Uncovering the Worlds of Hazardous Waste." Environment & Society Portal, *Virtual Exhibitions* 2021, no. 1. Rachel Carson Center for Environment and Society. http://www.environmentandsociety.org/node/9273.

Chapter: *Toxic Inheritance*: A Graphic Essay
Source URL: http://www.environmentandsociety.org/node/9292

PDF created on: 17 June 2021 10:28:59

SOURCES

1. Hecht, S. B. & Cockburn, A. The fate of the forest: developers, destroyers, and defenders of the Amazon. (University of Chicago Press, 2010).
2. Barrett, P. M. Law of the Jungle: The $19 Billion Legal Battle Over Oil in the Rain Forest and the Lawyer Who'd Stop at Nothing to Win. (Crown, 2014).
3. Langewiesche, W. Jungle Law. Vanity Fair (2007).
4. Kimerling, J. Amazon Crude. (Natural Resources Defense Council, 1991).
5. Intercontinental Cry. Chevron's Amazon Chernobyl Case moves to Canada. Intercontinental Cry https://intercontinentalcry.org/chevrons-amazon-chernobyl-case-moves-to-canada/ (2017).
6. Wasserstrom, R. & Southgate D. Deforestation, Agrarian Reform and Oil Development in Ecuador, 1964 – 1994. Nat. Resour. 4, 31-44 (2013).
7. Agencia EFE. Ecuador logra récord en extracción de petróleo en zona protegida de Amazonía, según Petroamazonas. El comercio https://www.elcomercio.com/actualidad/ecuador-record-extraccion-petroleo-yasuni.html (2019).
8. Fiske, A. Dirty Hands: The toxic politics of denunciation. Soc. Stud. Sci. 48, 389-413 (2018).
9. Fiske, A. Naked in the face of contamination. Thinking models and metaphors of toxicity together. Catalyst: Feminism, Theory, Technoscience. 6(1): 1-30. (2020)
10. Lyons, K. Decomposition as Life Politics: Soils, Selva, and Small Farmers under the Gun of the U.S.-Colombian War on Drugs. Cult. Anthropol. 31, 56 – 81 (2016).
11. Davis, D. When Smoke Ran Like Water: Tales of Environmental Deception And The Battle Against Pollution. (Basic Books, 2003).
12. Harrison, J. L. Pesticide Drift and the Pursuit of Environmental Justice. (The MIT Press, 2011).
13. Lundqvist, C. et. al. The effects of PCBs and dioxins on child health. Acta Paediatr. Suppl. 95, 55-64 (2006).

14. Wahlberg, A. Exposed Biologies and the Banking of Reproductive Vitality in China. Sci. Technol. Soc. (2018).
15. Liboiron, M. How toxic flame retardant chemicals become- and stay- ubiquitous in our homes and bodies. Discard Studies https://discardstudies.com/2016/10/25/how-toxic-flame-retardant-chemicals-become-and-stay-ubiquitous-in-our-homes-and-bodies/ (2016)
16. Shapiro, N. Attuning to the Chemosphere: Domestic Formaldehyde, Bodily Reasoning, and the Chemical Sublime. Cult. Anthropol. 30, 368-393 (2015).
17. Carrington, D. Plastic fibres found in tap water around the world, study reveals. The Guardian (2017).

BIOGRAPHIES

Amelia Fiske (PhD, University of North Carolina at Chapel Hill) is a Cultural Anthropologist specializing in medical anthropology, science studies and environmental humanities. From 2011-2013, Fiske completed an ethnographic investigation of the socio-environmental relations of harm resulting from the oil industry in the Ecuadorian Amazon. She is currently a Senior Research Fellow at the Institute for History and Ethics in Medicine at the Technical University of Munich (Germany).

Jonas Fischer (BA, Muthesius University of Fine Arts and Design) is a graphic designer with experience communicating scientific knowledge to the public in a visual form. In 2018, Fischer published a graphic novel in collaboration with archaeologists titled "Habt ihr wieder nur altes kaputtes Zeug gefunden?". He is currently studying at Muthesius University of Fine Arts and Design in Kiel (Germany).

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Chapter: *Toxic Inheritance*: A Graphic Essay
Source URL: http://www.environmentandsociety.org/node/9292

PDF created on: 17 June 2021 10:28:59

Websites linked in this text:

- https://thenib.com/toxic-inheritance/

Feichtner, Maximilian, Jonas Stuck, Ayushi Dhawan, Christina Lennartz, and Simone M. Müller. "Toxic Relationships: Uncovering the Worlds of Hazardous Waste." Environment & Society Portal, *Virtual Exhibitions* 2021, no. 1. Rachel Carson Center for Environment and Society. http://www.environmentandsociety.org/node/9273.

Chapter: *Toxic Inheritance*: A Graphic Essay
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About the Exhibition

Modern societies' hazardous by-products cast a dark shadow over the planet. A threat to humans and the environment alike, hazardous waste comes in many guises: discarded batteries, asbestos, giant ships, or tailings from mining operations. While these objects might not seem dangerous at first sight, they have characteristics and components that make them potentially deadly. This virtual exhibition gives you an insight into the obscure world of hazardous waste, its questionable trade across the globe, and the people successfully fighting for safe and just waste management. The *Hazardous Travels* research team takes you on a journey both into our research and to the edges of our societies that many prefer not to see.

Acknowledgements

The Digital Humanities open an intriguing space for true teamwork. We, the entire *Hazardous Travels* research group, are profoundly thankful for this opportunity to develop a virtual exhibition together with the Rachel Carson Center's Environment and Society Portal. With their dedication and expertise, Kimberly Coulter, Jonatan Palmblad, and Iris Trautmann were crucial in making this exhibition not only happen, but look visually appealing. We also owe a big thank you to the anonymous peer reviewers and their thoughtful insights and suggestions. Finally, we feel honored to exhibit the original work of several artists, including Christian Mayer, Theresa Leisgang, Jonas Fischer, and Amelia Fiske. This exhibition was made possible with the financial support of the German Research Foundation (DFG).

About the authors

This exhibition is a joint project of the DFG Emmy Noether Research Group "Hazardous Travels: Ghost Acres and the Global Waste Economy" at the Rachel Carson Center for Environment and Society in Munich. Maximilian Feichtner coordinated this virtual exhibition; he wrote his PhD thesis on the history of oil extraction and contamination in the Ecuadorean Amazon. His fellow PhD students Ayushi Dhawan and Jonas Stuck investigate the ship-breaking industry in Alang, India, and the hazardous waste trade between East and West Germany, respectively. Christina Lennartz is the team's research assistant, pursuing a B.A. in Business Administration. And finally, Dr. Simone M. Müller is the project director and principal investigator of the research group, exploring the export of hazardous waste from the United States to the rest of the world. You can contact the authors at haztrav@rcc.lmu.de and learn more about their work on Twitter

How to cite

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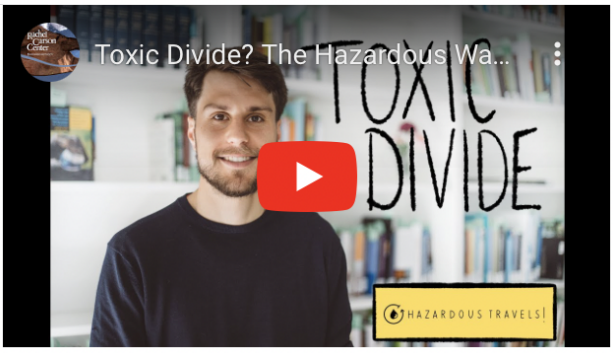
Hazards in the Amazon: An Environmental History of Oil Production in Ecuador.

Oil contamination is not the most pleasant PhD topic. In this clip, **Maximilian Feichtner** from the Rachel Carson Center at LMU Munich gives an insight into his research project in the polluted Ecuadorian rainforest — and shares his fondest memories.



Toxic Divide? The Hazardous Waste Trade between the two Germanys, 1970-2000.

In this interview environmental historian **Jonas Stuck** explains his PhD project about the trade with toxic waste between West and East Germany from the 1970s until the fall of the Wall. This externalization of waste from West Germany to its Eastern neighbor was essential for the import of hard currency for the East German economy. The culmination point of this exchange was the establishment of Europe's biggest landfill for toxic waste in Schönberg, northern East Germany. Jonas Stuck opens up about ways of how to engage with a wider audience and his struggles during his PhD project.

India's Shipbreaking Business, Emerging Economies, and the "Right to Pollute?"

Ayushi Dhawan, a researcher at the Rachel Carson Center for Environment and Society gives insight into her doctoral project on the Shipbreaking business in Alang, India, challenges one faces as a researcher on waste, her fondest memories while researching about the topic and the stereotypes that are often attached to the business.

Hazardous Travels: A Ship's Tale of U.S. Ghost Acres and the Global Waste Economy

Dr. Simone Müller, project director of hazardous travels, gives insight into the overall project of Hazardous Travels, what got her interested in the trade with waste, and why waste is such a challenging object to work with. Listen in, if you want to learn more about her fascinating research.

Websites linked in this text:

- https://www.hazardoustravels.carsoncenter.uni-muenchen.de/index.html
- https://www.carsoncenter.uni-muenchen.de/about_rcc/index.html
- https://www.hazardoustravels.carsoncenter.uni-muenchen.de/_allgemein_-ordner-person/maximilian_feichtner/index.html
- https://www.hazardoustravels.carsoncenter.uni-muenchen.de/_allgemein_-ordner-person/ayushi_dhawan/index.html
- https://www.hazardoustravels.carsoncenter.uni-muenchen.de/_allgemein_-ordner-person/jonas_stuck/index.html
- https://www.hazardoustravels.carsoncenter.uni-muenchen.de/_allgemein_-ordner-person/lennartz_christina/index.html
- http://www.academia-net.org/profil/dr-simone-m-mueller/1422787
- https://twitter.com/haztravrcc
- http://www.environmentandsociety.org/exhibitions/toxic-relationships

Feichtner, Maximilian, Jonas Stuck, Ayushi Dhawan, Christina Lennartz, and Simone M. Müller. "Toxic Relationships: Uncovering the Worlds of Hazardous Waste." Environment & Society Portal, *Virtual Exhibitions* 2021, no. 1. Rachel Carson Center for Environment and Society. http://www.environmentandsociety.org/node/9273.

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Photograph by John Messina, 1972.

Photograph by Jonas Stuck, 2019.

Jonas Stuck is a member of the *Hazardous Travels* research team.

Petri Damstén, *My Lake*, 2021.

Petri Damstén, *Kiss of Death*, 2013.

Discussion at the 39th meeting of the parties to the London Convention and the London Protocol at the International Maritime Organization (IMO) in 2017. Unknown photographer, 2017.

This haunting graffiti on a trash container exhibited close to Lyon, France, protests the ecological catastrophe caused by the oil spill from BP's Deepwater Horizon in the Gulf of Mexico in 2010. Photograph by Thierry Ehrmann, 2010.

Photograph by Thierry Ehrmann, 2010.

Feichtner, Maximilian, Jonas Stuck, Ayushi Dhawan, Christina Lennartz, and Simone M. Müller. "Toxic Relationships: Uncovering the Worlds of Hazardous Waste." Environment & Society Portal, *Virtual Exhibitions* 2021, no. 1. Rachel Carson Center for Environment and Society. http://www.environmentandsociety.org/node/9273.
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Detail of the graphic essay "Toxic Inheritance" that takes you on an intriguing visual journey to the polluted rainforests of Ecuador. Click the image to read the full essay.

Illustration by Jonas Fischer.

Unknown photographer, no date.

Accessed via Pixabay on 29 April 2021.
Click here to view source .

Websites linked in image captions:

- https://en.wikipedia.org/wiki/File:A_MOUNTAIN_OF_DAMAGED_OIL_DRUMS_NEAR_THE_EXXON_REFINERY_-_NARA_-_546000_(cropped).jpg
- https://www.flickr.com/photos/pdamsten/10054045614/
- https://www.flickr.com/photos/pdamsten/50890217907
- https://www.flickr.com/photos/62937028@N02/37558568272
- https://www.flickr.com/photos/40936370@N00/4906629969
- https://pixabay.com/photos/trash-cans-dustbin-garbage-can-16004/

Feichtner, Maximilian, Jonas Stuck, Ayushi Dhawan, Christina Lennartz, and Simone M. Müller. "Toxic Relationships: Uncovering the Worlds of Hazardous Waste." Environment & Society Portal, *Virtual Exhibitions* 2021, no. 1. Rachel Carson Center for Environment and Society. http://www.environmentandsociety.org/node/9273.

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