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Regulatory Impacts on US Hazardous Waste Exports

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Regulatory Impacts on US Hazardous Waste Exports

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Abstract

This paper examines the impact of key domestic and international regulations on US hazardous waste exports, focusing on shifts in export destinations and waste types from 2002 to 2023. Since 2005, OECD countries and US Trade Agreement Partners have become primary destinations for US hazardous waste, with significant surges after 2018 and a notable decline in 2022. An analysis of the regulatory landscape reveals that, while international frameworks such as the Basel Convention of 2021 have had a relatively limited impact on reducing US hazardous waste exports, domestic policies—particularly those in California—have more directly influenced export behaviors. Additionally, the US Inflation Reduction Act (IRA) of 2022 has contributed by incentivizing the development of clean energy infrastructure, leading to increased battery production and recycling requirements, thereby impacting hazardous waste flows. The study also explores how the Paris Agreement indirectly influenced hazardous waste exports by accelerating the transition to electric vehicles, thus increasing demand for lead and battery recycling. This paper underscores the complexities of managing dangerous waste under fragmented regulations. It highlights the need for stronger global standards and investment in local recycling infrastructure to minimize environmental risks associated with waste exports.

1. Introduction

In the United States, solid waste is classified as hazardous if it is either a listed waste or a characteristic waste. Listed wastes are those identified by the Environmental Protection Agency (EPA) as dangerous based on their source, such as from standard industrial processes, specific industries, or discarded commercial chemical products. Alternatively, a waste is considered a characteristic hazardous waste if it exhibits the following four properties: ignitability, corrosivity, reactivity, or toxicity (US Environmental Protection Agency, 2023). Hazardous waste management has long posed significant environmental and regulatory challenges, both domestically and internationally. The complex global network of dangerous waste trade is governed by an evolving array of policies that mitigate ecological harm while balancing economic and industrial interests. Over the past decade, several key international and domestic regulations have reshaped the dynamics of hazardous waste exports from the United States.

Despite these regulations, the US's hazardous waste exports have risen significantly since 2018, with notable increases in states like California. The underlying causes and impacts of this surge are complex, warranting a closer

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examination of how different regulations—both international and domestic—have influenced hazardous waste flows.

This paper uses national and state-level data to analyze the effects of these regulatory changes, providing a comprehensive assessment of trends in US hazardous waste exports in the post-2018 period. It explores whether these policies have contributed to notable shifts in export behaviors and identifies the drivers behind the sharp rise in exports from key states. By examining international and domestic regulatory landscapes, this study provides valuable insights into the complex relationship between policy and hazardous waste export practices in the US.

2. Overview of Regulations Affecting Hazardous Wastes Exports

Several regulations at the national and international levels affect the export of hazardous waste. These regulations are primarily designed to ensure the safe handling, transportation, and disposal of hazardous materials while minimizing environmental and public health risks. Below are the key rules that impact dangerous waste exports from the US.

2.1 US Domestic Regulation

2.1.1 Resource Conservation and Recovery Act (RCRA)

The RCRA is the primary US law governing hazardous waste generation, transportation, treatment, storage, and disposal. It ensures that hazardous waste is managed environmentally soundly in the US and during export.

Under the RCRA, at least 60 days before the first shipment, exporters must provide detailed information about the type of waste, the destination, and the method of disposal or recycling to the US Environmental Protection Agency (EPA) and obtain written consent from the receiving country before any shipments are made. This regulation applies to all hazardous waste being exported for disposal or recycling, ensuring that international shipments comply with US and importing countries' laws.

Under RCRA, the EPA finalized the Hazardous Waste Generator Improvements Rule in 2016 to enhance domestic compliance and reporting, potentially making it easier to track and classify hazardous waste, including those destined for export (US Environmental Protection Agency, 2016).

2.1.2 The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

CERCLA, also known as Superfund, governs the cleanup of hazardous waste sites in the US. It imposes liability on parties responsible for releasing hazardous substances into the environment.

Although primarily focused on domestic waste management, CERCL also influences how hazardous waste is managed before it is exported. Companies that export dangerous waste must ensure that their waste does not cause environmental

contamination in the US before it is shipped. Hence, CERCLA may hold exporters liable if hazardous waste is improperly managed before export or causes environmental damage during transport.

Recent legislative and regulatory changes have further broadened CERCLA's reach, particularly impacting emerging contaminants. The 2018 BUILD Act amended the statute to expand cleanup capacity and liability protections for contaminated sites (Congress.gov, 2018). Following this, the EPA has since proposed designating PFAS as a hazardous substance, which would significantly expand the scope of Superfund enforcement to include these prevalent chemicals, potentially affecting their classification and management for both domestic disposal and export (US Environmental Protection Agency, 2022).

2.1.3 Inflation Reduction Act (IRA)

The Inflation Reduction Act (IRA), signed into law on August 16, 2022, is a landmark US policy aiming to reduce greenhouse gas emissions and stimulate investment in clean energy technologies.

The act allocates significant funding and tax incentives to support developing and deploying renewable energy sources, electric vehicles (EVs), and battery manufacturing and recycling infrastructure. Over the next decade, the IRA will dedicate around $370 billion toward clean energy and climate initiatives through tax credits, grants, and loans. These investments are projected to lower energy costs for families and small businesses while scaling renewable power generation and battery technologies (The White House, 2022). To decrease reliance on foreign resources and reduce hazardous waste associated with lead-acid batteries, the IRA and the CHIPS & Science Act commit over $135 billion to strengthening America’s EV ecosystem, including domestic battery manufacturing, critical minerals sourcing, and battery recycling infrastructure (The White House, 2022). The Bipartisan Infrastructure Law contributes $7.5 billion toward building a national network of public EV chargers—$5 billion for interstate fast-charging corridors and $2.5 billion in competitive local grants (The White House, 2022).

Beyond clean energy and EVs, the IRA reshapes hazardous-waste cleanup by reinstating the Superfund petroleum excise tax at 16.4¢/barrel (indexed annually for inflation starting in 2023), with receipts credited to the Hazardous Substance Superfund Trust Fund that finances EPA cleanups of highly contaminated sites (Congress.gov, 2022). The IRA also created a $3 billion Environmental & Climate Justice (ECJ) program under the Clean Air Act—$2.8 billion for grants plus $200 million for technical assistance—to support community-driven projects addressing environmental and public-health harms in disproportionately burdened communities (EPA, 2025).

2.2 International Treaty

2.2.1 Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal

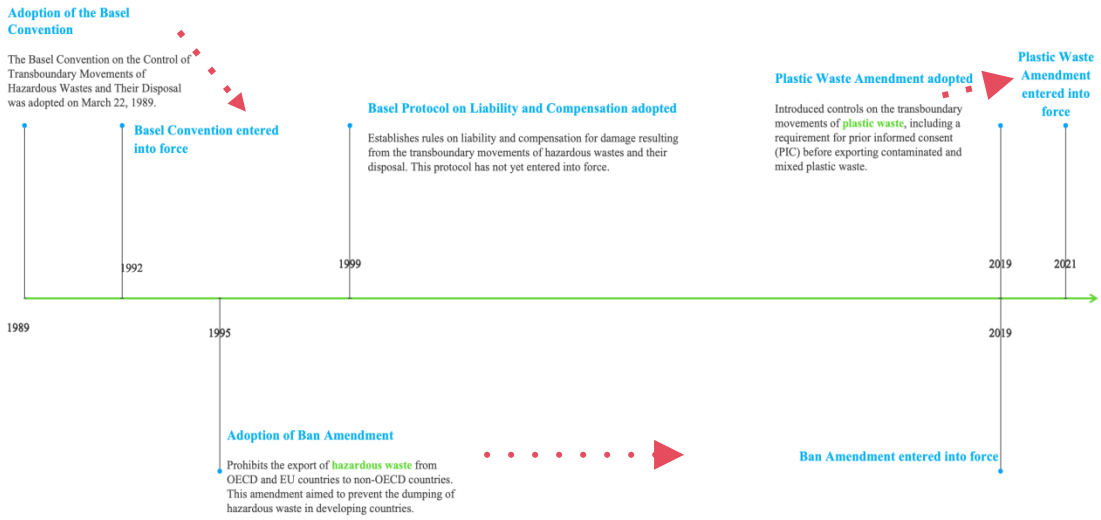
The Basel Convention, adopted in 1989, is a global framework to regulate the transboundary movement of hazardous waste and prevent illegal dumping, especially in developing countries. By 1992, the Convention had created legally binding obligations for participating countries to handle hazardous waste safely and responsibly (see Figure 1).

One of the most transformative developments under the Basel framework was the Ban Amendment, which was adopted in 1995 and enacted in 2019. This amendment prohibits the export of hazardous waste from OECD and EU countries to non-OECD nations, aiming to curb the exploitation of developing countries as hazardous waste dumping grounds.

Another significant development was the Plastic Waste Amendment, adopted in 2019 and entered into force in 2021. This amendment addressed escalating plastic pollution issues by mandating prior informed consent (PIC) for exporting contaminated or mixed plastic waste, reducing the plastic waste burden of countries that often lack adequate infrastructure to manage it properly.

Although the United States has not ratified the Basel Convention, many of its major trade partners have signed it. The US's non-compliance could lead to trade barriers, legal complications, or increased costs for US exporters.

Figure 1. Overview of the Basel Convention Timeline and key Events



2.2.2 OECD Decision C (2001)107/FINAL – Transboundary Movement of Wastes Destined for Recovery Operations

The OECD Decision C (2001)107/FINAL, adopted by the Organization for Economic Co-operation and Development (OECD), establishes a common legal framework for the transboundary movement of hazardous waste destined for recovery and recycling among all OECD member countries. This decision applies to all OECD member countries, including major US trade partners such as Canada, Mexico, and various European nations. It simplifies export and import procedures for hazardous waste and ensures that waste is managed in an environmentally sound manner. The OECD Decision plays a vital role for the United States by reducing bureaucratic barriers and

streamlining procedures for exporting hazardous waste to other OECD members.

Like the Basel Convention, the OECD Decision requires a notification and consent system: exporters must notify relevant authorities in both the exporting and importing countries, and receive approval before hazardous waste can be exported.

2.2.3 China's series of Regulations on Hazardous Waste Importation

China repeatedly revised its Law on the Prevention and Control of Environmental Pollution by Solid Wastes (revisions in 2004, 2013, 2015, 2016) to strengthen control over solid and hazardous waste and the catalogue-based licensing system for any imports (NPC Observer, 2020).

In 2017, China declared a ban on imported recyclable waste, officially known as the National Sword Policy, a significant shift in global waste management. Starting from January 2018, China restricted the import of 24 types of solid waste, including plastics and unsorted paper, and raised contamination standards for other recyclable materials (Reuters, 2017). Although the policy did not directly target hazardous waste, it was justified by concerns that "substantial amounts of dirty wastes or even hazardous wastes" were mixed in with imported solid waste. The new contamination threshold of 0.5% was so strict that it effectively functioned as a ban on much of the world's recyclables (Brooks et al., 2018; US Environmental Protection Agency, 2018). This policy was a precursor to a more comprehensive measure: a total ban on all solid waste imports implemented in 2021. This final step marked the culmination of a years-long effort to end China's role as the world's primary waste importer, forcing a global re-evaluation of waste management practices (The White House, 2022).

3. Data and Results

3.1 Data

USA Trade Online, maintained by the US Census Bureau, provides comprehensive trade data, including exports of hazardous materials. This data is organized according to the Harmonized System (HS) codes and includes economic statistics like quantity and value of shipments.

The Basel Convention relies on specific waste characteristics to define what is considered hazardous (e.g., ecotoxic, corrosive). However, HS codes are based on product descriptions that may include hazardous and non-hazardous materials. To address this mismatch, Derek Kellenberg and Arik Levinson, the authors of the paper "Waste of Effort? International Environmental Agreements" (2013), refined a broader dataset of 60 HS codes of various types of waste, selecting 20 HS codes that most closely matched the waste categories defined as hazardous in Annex VIII of the Basel Convention. This second dataset accurately measures dangerous waste trade, aligning more closely with the Basel Convention's definitions.

However, Kellenberg and Levinson's analysis used a dataset of bilateral waste trade from 1988 to 2008, during which the Basel Ban Amendment was adopted (1995)

but had not yet entered into force (2019). To build on their work, this paper instead focuses on US waste export patterns by grouping recipient countries into what we call the Trade Partner Group and selects the dataset from 2002 to 2023. This group includes OECD members and major US waste trade partners outside the OECD, such as China, Hong Kong, Taiwan, India, Malaysia, the Philippines, Vietnam, and Thailand. It also incorporates US Free Trade Agreement partners, including those under the CAFTA-DR[2] and the USMCA[3]. Organizing countries into this Trade Partner Group can better capture how US hazardous waste exports respond to both OECD-based frameworks and broader bilateral or regional trade agreements.

3.2 Results

3.2.1 The Nationwide Status of Hazardous Waste Exports

Figure 2 illustrates the trends in total weight and value of hazardous waste exports from the US to various countries within the Trade Partners Group between 2002 and 2023. These trends indicate that OECD countries and the US Trade Agreements Partners have been the primary destinations for US hazardous waste exports, especially from 2015 to 2020, when both weight and value surged. In contrast, exports to India grew since 2010, while exports to China declined significantly since 2003. Meanwhile, Southeast Asia exhibits more volatility, some growth, but generally receives smaller volumes than the OECD and the Free Trade Agreement partners.

The Ban Amendment of the Basel Convention may contribute to this trend as it came into effect in 2019, and since then US should not export hazardous waste to non-OECD countries.

The United States-Mexico-Canada Agreement (USMCA), which replaced the North American Free Trade Agreement (NAFTA), may contribute to the significant increase in US hazardous waste exports in 2021. Signed in 2018 and implemented in 2020, the USMCA simplified customs procedures, reducing trade barriers of goods, including dangerous waste, whilst improving transparency and regulatory consistency (US Customs and Border Protection, 2020). This shared responsibility can streamline the permitting process and make the transboundary movement of waste more efficient.

However, a significant export downturn occurred post-2020, suggesting potential regulatory changes, shifts in trade relationships, or adjustments in global hazardous waste management practices. From 2021 to 2022, countries like Canada, Mexico, and EL Salvador enhanced enforcement of regulations on hazardous waste imports from the US, primarily driven by updates to international agreements such as the Basel Convention.

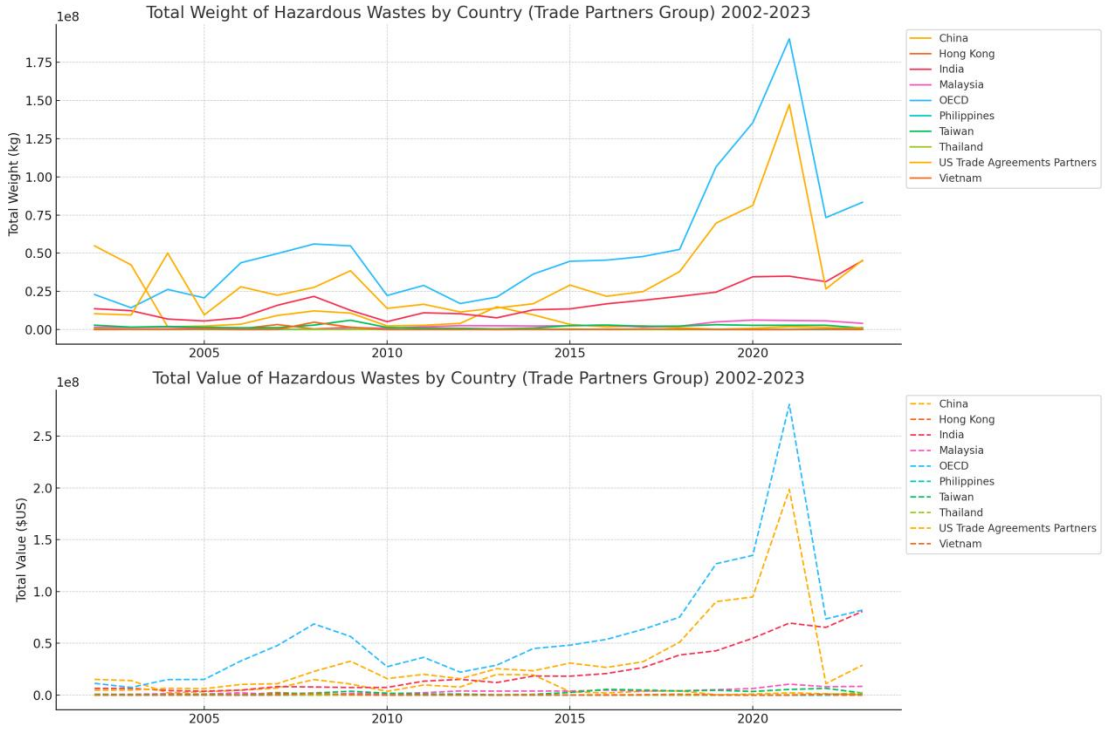
As an OECD member, Canada introduced the Cross-border Movement of

[2] The CAFTA-DR was signed on May 28, 2004, and it came into effect on July 1, 2006, for the Dominican Republic, and gradually for other Central American countries (Costa Rica, Dominican Republic, EI Salvador, Guatemala, Hongduras, Nicaragua). This agreement aimed to reduce trade barriers and increase economic cooperation between the US and its Central American partners

[3] The USMCA was signed on November 30, 2018, and came into effect on July 1, 2020. It was created to replace the North American Free Trade Agreement (NAFTA), aiming to modernize trade relations between these countries: Australia, Bahrain, Chile, Colombia, Israel, Jordan, South Korea, Morocco, Oman, and Panama.

Hazardous Waste and Hazardous Recyclable Material Regulations (XBR) in October 2021, which consolidated several previous regulations and reinforced control over hazardous waste imports, including stricter tracking, notification, and consent procedures for hazardous waste entering the country (Environment and Climate Change Canada, n.d.). With only 17 authorizations granted from September 2021 to mid-2022, Mexico also reduced the number of permits issued for hazardous waste imports. It intensified enforcement actions, indicating compliance with international environmental agreements like the Basel and Minamata conventions. These stricter controls reflect Mexico's commitment to better regulate hazardous waste inflows, particularly from the US, which remains a significant source of such waste (Opportimes, 2022). In 2021, El Salvador followed suit under similar pressures from international conventions like Basel. El Salvador implemented stricter monitoring and permit systems for hazardous waste, enhancing its ability to control waste flows and prevent illegal, dangerous materials from entering its borders (UN Environment Programme, n.d.).

Figure 2. Hazardous Wastes Exports from the United States to the Trade Partner Group



The decline may also be attributed to the IRA's substantial funding and tax incentives, which support developing and deploying renewable energy sources, electric vehicles (EVs), and battery manufacturing and recycling infrastructure within the country in 2022 (see 2.1.3).

Figure 3 illustrates the Top 5 hazardous waste types exported by the US to the Trade Partners Group from 2002 to 2023, comparing their total weight in kilograms and total value in US dollars. The categories with the most substantial export volumes and values include Lead Waste, Scrap, and Spent Batteries & Cells.

The Paris Agreement may have contributed to this increase, encouraging countries to update or adopt stricter emission reduction targets by 2020 (United Nations, 2015). Hence, around 2018, many countries began intensifying their efforts to reduce carbon emissions in line with the Paris Agreement, prompting a significant policy-driven demand shift toward electric vehicles (EVs) (International Energy Agency, 2023). Not only have lithium-ion batteries replaced lead-acid batteries as the dominant power source for EVs due to their superior energy density and efficiency (IEA, 2023), but newer battery chemistries, such as lithium iron phosphate and nickel cobalt manganese, have also been developed to meet the increasing energy and performance demands of modern EVs. Lead-acid batteries' increasing redundancy in EV production has created a growing need for lead-acid battery disposal and recycling. Hence, these batteries are frequently exported to countries with lower labour costs and less stringent recycling regulations (Batteries International, 2023).

Figure 4 shows the trends in exported hazardous waste for 49 states and regions (including territories such as Puerto Rico and the US Virgin Islands), and we can clearly see that California dominates the rankings.

Figure 3. Top 5 Hazardous Commodities by Weight and Value of Trade Partners Group

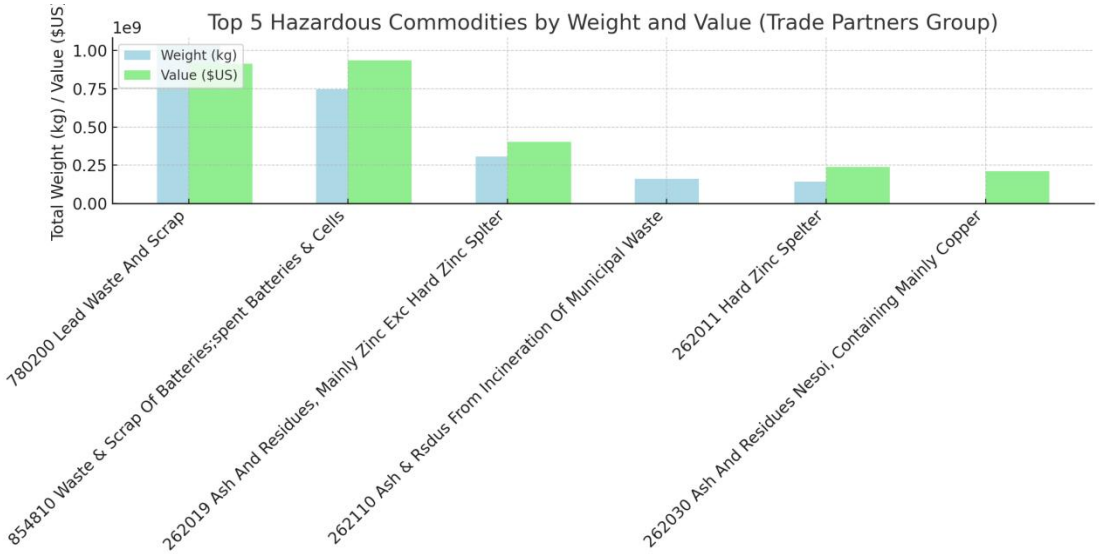
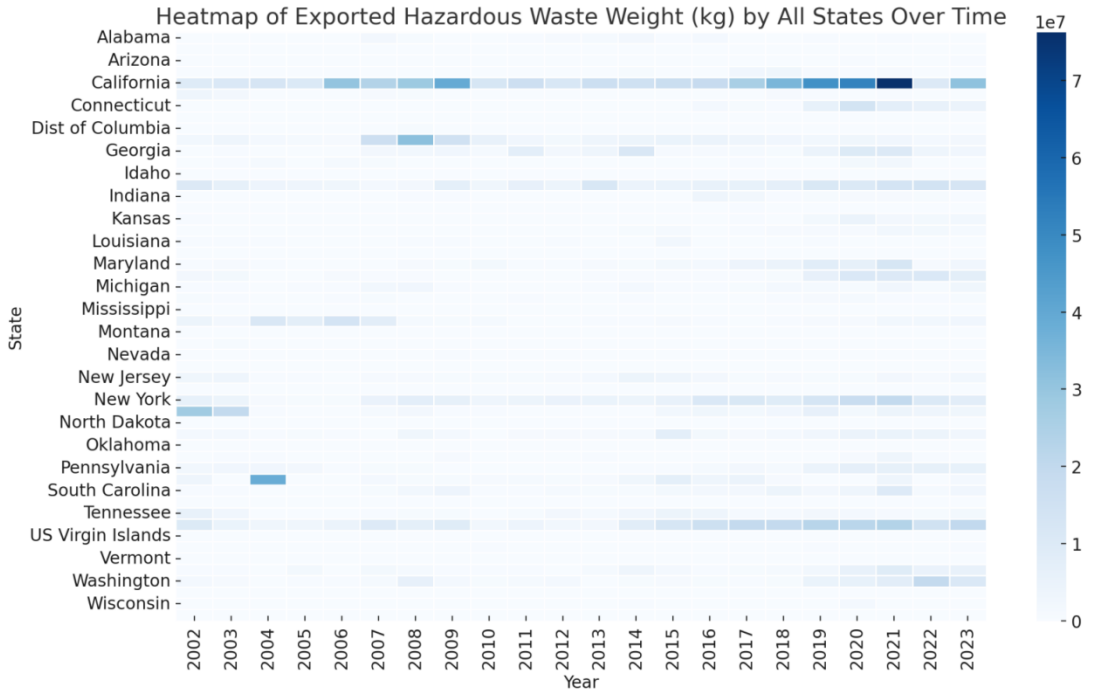


Figure 4. Heatmaps of Exported Hazardous Wastes in Total Value and Weight of States and Federal Districts 2002-2023



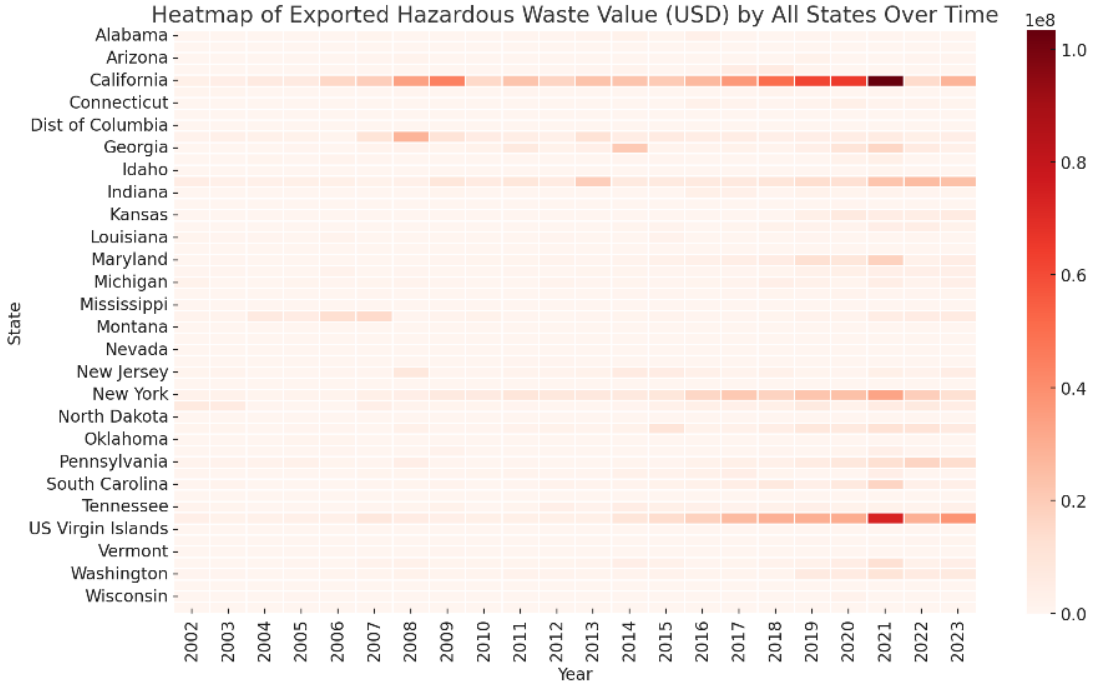


Figure 5 highlights the top 10 significant contributions from states like California (25.81%), Texas (11.28%), and New York (7.57%) regarding the volume of exported hazardous waste at the national level.

Figure 5. Top 10 US States by Exported Hazardous Waste Weight and Percentage of Total

State	Export Weight (kg)	Percentage of Total (%)
California	556,780,315	25.81%
Texas	243,349,225	11.28%
New York	163,210,654	7.57%
Illinois	156,967,518	7.28%
Florida	120,947,664	5.61%
North Carolina	82,922,758	3.84%
Puerto Rico	74,237,759	3.44%
Georgia	71,221,815	3.30%
Washington	70,080,243	3.25%
Missouri	64,835,546	3.01%

Moreover, the trends in hazardous waste exports from California over the year (**Figure 6**) closely mirror those of the US, making it an ideal case study for analyzing the relationship between relevant regulations and hazardous waste exports. As such, we focus on California to explore these correlations in greater depth.

Figure 6. Trends of Hazardous Waste Exported from California (2002-2023)

3.2.2 The Status of Hazardous Waste Exports in California

California Hazardous Waste Control Law (HWCL) is California's hazardous-waste statute. The California Department of Toxic Substances Control (DTSC) was established in 1981 under the California Environmental Protection Agency (CalEPA). The DTSC implements and enforces the HWCL under the RCRA framework.

Senate Bill 673 (SB 673) and Assembly Bill 1075 (AB 1075), enacted in California in 2015, tightened the state's hazardous-waste oversight by raising the bar on permitting and enforcement. SB 673 directed DTSC to adopt more rigorous facility-permitting criteria that account for compliance history and cumulative community vulnerabilities, and DTSC's subsequent rulemaking elevated review standards and risk analyses that can lengthen or complicate permit decisions (California Legislature, 2015b). Complementing this, AB 1075 increased penalties and made recurring serious violations a "compelling cause" to deny, suspend, or revoke permits—heightening closure or denial risks for poorly performing facilities and potentially constraining in-state treatment and disposal capacity (California Legislature, 2015a). According to California's DTSC, their permitted hazardous-waste management facilities fell from 118 total (89 operating) in 2015 to roughly the mid-70s operating by 2022, indicating a notable contraction in in-state capacity (Independent Review Panel, 2016; Department of Toxic Substances Control, 2023). These changes may have encouraged more recycling or out-of-state shipment rather than local disposal, aligning with the substantial rise in hazardous-waste exports from California since 2015; as shown in Figure 6, exports peaked at approximately 146,942.47 tonnes by 2021.

Through 2021, California's hazardous-waste landscape shifted markedly with new legislation and regulatory reforms such as Senate Bill 158 (SB158), which was enacted in July 2021. Rather than encouraging exports, SB 158's core aim was to strengthen in-state management—stabilizing DTSC's governance and finances so more waste can be safely processed locally instead of shipped out of state. The law required DTSC to produce recurring, statewide hazardous-waste reports and management plans to guide permitting and capacity decisions, increased accountability (including new oversight structures), and created a durable funding model—most notably the per-ton Generation and Handling Fee—to ensure the department has the resources to modernize permits, improve oversight, and support domestic treatment and disposal capacity. (Legislative Analyst's Office, 2022).

In 2022, additional regulations like Senate Bill 1215 (SB1215) and the Responsible Battery Recycling Act of 2022 (AB2440) were implemented. AB2440 establishes a producer-funded extended producer responsibility (EPR) program for loose batteries. At the same time, SB 1215 brings battery-embedded products into California's CEW recycling system, building statewide collection and in-state recycling pathways to reduce the need to export battery-related hazardous waste （Beveridge & Diamond, 2022).

4. Literature Review

The papers below highlight the challenges and opportunities presented by

international environmental agreements, and discuss their impact on hazardous waste management, particularly concerning US hazardous waste exports.

"Waste of Effort? International Environmental Agreements" by Derek Kellenberg and Arik Levinson (2013) examines the effectiveness of the Basel Convention and the Ban Amendment in reducing hazardous waste exports. Using a dataset of bilateral waste trade from 124 countries over 17 years (1988–2008), the authors employ a gravity model of international trade to assess how these agreements influenced waste flows. The study finds little evidence that the Basel Convention or Ban Amendment significantly reduced hazardous waste exports, especially from wealthier countries to developing nations. While countries that ratified the agreements showed reduced waste exports, the authors suggest that these trends would have occurred even without the treaties.

Kellenberg and Levinson argue that international environmental agreements like the Basel Convention face challenges, such as free-rider problems where certain parties do not contribute sufficiently to waste reduction efforts, and endogenous selection where countries that are already inclined to reduce waste are more likely to sign, whilst countries with other priorities do not change their behavior. The authors express skepticism about the overall effectiveness of these agreements, emphasizing the difficulty in evaluating them due to data limitations and the complexities of measuring their impact.

"Treat, Dump, or Export: A Global Environmental Strategy for Hazardous Waste" by Wijnsma et al. (2023) analyzes global hazardous waste flows and evaluates the impact of international agreements like the Basel Convention on hazardous waste trade. The authors use a gravity model to show that dangerous waste exports from OECD countries to non-OECD countries have decreased, while non-signatory countries, like the US, export waste, often to Southeast Asia. The paper highlights the environmental and economic trade-offs between local treatment, dumping, and exporting hazardous waste, arguing for stronger international cooperation to mitigate environmental risks in recipient countries. The authors emphasize that the US should harmonize its waste policies with global standards to prevent ecological degradation abroad.

"China's Ban of Imported Recyclable Waste and Its Impact on Global Waste Trade" by Wang et al. (2023) examines the effects of China's 2017 ban on the import of foreign recyclable waste. Using trade data and a difference-in-differences approach, the authors show that China's ban disrupted global waste trade, redirecting waste exports to Southeast Asian countries like Vietnam, Malaysia, and Thailand. The US, which had relied heavily on exporting waste to China, was significantly affected. The authors argue that China's policy shift has exposed vulnerabilities in the global waste management system and call for stronger international regulations to ensure that waste exports to developing countries are managed responsibly.

The paper titled "Regulating Hazardous Wastes under US Environmental Federalism: The Role of State Resources" by Blundell, Evans, and Stafford (2021) explores the impact of state resources on hazardous waste monitoring and enforcement, focusing on extensive facilities regulated under the Resource Conservation and Recovery Act (RCRA). The paper employs an empirical

methodology using state-level data from 46 US states between 2011 and 2018 to analyze the relationship between state environmental agency budgets and their ability to conduct RCRA inspections and enforcement actions. The analysis reveals that reductions in state budgets lead to significant decreases in inspections and enforcement, particularly for extensive hazardous waste facilities.

One notable finding is that California is excluded from the analysis due to its delegation of RCRA responsibilities to local Certified Unified Program Agencies (CUPAs), complicating data consistency and reporting for RCRAInfo. The authors also highlight that the US hazardous waste regulatory landscape varies substantially across states, which can result in uneven environmental protection efforts. Their findings suggest that constrained budgets reduce monitoring effectiveness, often leading to a shift from resource-intensive on-site inspections to less effective off-site records reviews. Reduced budgets lead to poorer environmental outcomes, including higher violation rates in hazardous waste facilities.

5. Conclusion

The study highlights how domestic and international regulations collectively shape these export patterns, though their effects vary in scope and effectiveness. Notably, while the Basel Convention has a limited impact in controlling the hazardous waste trade as it lacks a unified international penalty system to enforce compliance, it did prompt stricter import regulations in some key trade partners of the United States, such as Canada. This tightening of regulations in specific regions, especially after enacting the Ban Amendment of the Basel Framework in 2021, caused a modest reduction in US waste export volumes. Contrastingly, the Paris Agreement may have indirectly increased exports of specific hazardous materials, like lead and batteries, since progress towards emission goals required accelerating the automotive industry's shift from fossil fuels to electric vehicles. Additionally, the 2022 Inflation Reduction Act (IRA) is expected to influence US hazardous waste management in the future by promoting clean energy infrastructure and expanding domestic battery recycling, which may help reduce export dependence.

California illustrates the importance of state-level initiatives in managing hazardous waste, demonstrating how strict local regulations can significantly impact national export patterns. Conversely, inconsistent standards across regions complicate the development of effective policies for managing transboundary hazardous waste. To effectively address domestic hazardous waste treatment challenges, the US should make substantial, strategically allocated investments across all states to expand recycling infrastructure and advanced processing capacity—thereby reducing reliance on exporting waste to jurisdictions with weaker environmental protections.

This study's limitations include reliance on observational data, which constrains causal inferences. Future research should adopt more robust methodologies to assess better causal relationships between regulatory changes and trends in hazardous waste exports.

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Appendix Table: Concordances Between HS6 Codes and Basel Annex VIII Codes for Hazardous Wastes

HS6 Code	Commodity Description	Basel Code
262011	Ash or residues containing hard zinc spelter	A1070, A1080
262019	Ash or residues, containing zinc other than hard zinc spelter	A1070, A1080
262030	Ash or residues containing mainly copper	A1090
262029	Ash or residues containing mainly lead	A1080
262110	Ash & residues from the incineration of municipal waste	Y47*
382510	Municipal waste	Y46*
382520	Sewage sludge	Y3, Y23, Y41**
382530	Clinical waste	A4020
382541	Halogenated waste organic solvents	A3150
382549	Waste organic solvents other than halogenated waste organic solvents	A3130, A3140
382550	Wastes of metal pickling liquors, hydraulic fluids, brake fluids & antifreeze fluids	A1060
382561	Wastes from chemical/allied industries, mainly containing organic constituents, n.e.s.	A3130, A3140
382569	Wastes from chemical/allied industries, n.e.s.	A4140, A4150
382590	Residual products of the chemical/allied industries, n.e.s.	A4140, A4150
810730	Cadmium waste & scrap	A1010
811020	Antimony waste & scrap	A1010
811213	Beryllium waste & scrap	A1010
780200	Lead waste & scrap	A1010
811252	Thallium waste & scrap	A1010
854810	Waste & scrap of primary cells, primary batteries & electric accumulators	A1160, A1170, A1180