STATUTORY VACCINE: REVISING 18 U.S.C. § 175 TO BETTER PREVENT BIO TERRORISM

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INTRODUCTION

In September 2001, Robert Stevens, an unsuspecting journalist in Boca Raton, Florida, received a normal-looking letter.[1] However, inside the envelope were concentrated spores of the deadly pathogen *Bacillus anthracis,* more commonly known as anthrax.[2] Robert Stevens passed away on October 5, 2001, only days after opening the letter, having been diagnosed with pneumonia, onset by inhalational anthrax.[3] Stevens' death marked the official start of the deadliest and most significant domestic bioterrorism incident to date.[4] Additional letters, each containing a cryptic message, a threat to the United States ("U.S."), and a fine powder, were mailed to U.S. Senators Daschle (D-SD), Leahy (D-VT), and the NBC News New York Office.[5] Throughout October and November 2001, five people were killed by these anthrax-laced letters, including two postal workers infected while processing the contaminated mail.[6] In addition to the five who died, seventeen more contracted the disease.[7]

After testing, the Federal Bureau of Investigation ("FBI") determined that the strain used in each attack was the same—the Ames strain, discovered and isolated in Texas in 1981 and shipped to the U.S. Army Medical Research Institute of Infectious Diseases ("USAMRIID") at Fort Detrick, Maryland.[8] It was later determined that the parent material was, more specifically, RMR-1029.[9] After combing through hundreds of suspects, the FBI named bioweapons expert and former USAMRIID researcher Dr. Steven Hatfill as the primary person of interest.[10] However, after a five-year investigation, which determined Hatfill lacked access to RMR-1029, he sued for

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[1] *See* U.S. DEP'T OF JUST., AMERITHRAX INVESTIGATIVE SUMMARY 1–2 (2010) [hereinafter AMERITHRAX INVESTIGATIVE SUMMARY].
[2] *See id.* at 1–3.
[3] *See id.* at 2, 4.
[4] *See id.* at 4.
[5] *See id.* at 1–2.
[6] *See* i*d.* at 2–3.
[7] *See* AMERITHRAX INVESTIGATIVE SUMMARY, *supra* note 1, at 2.
[8] *See id.* at 3, 5, 8, 15.
[9] *See id.* at 5.
[10] *See id.* at 18–19.

breaches of his civil liberties during the investigation, and the Justice Department settled for $5.8 million.[11]

In 2007, Dr. Bruce Ivins, a researcher at USAMRIID, was named the new person of interest.[12] He talked extensively with colleagues about the threat anthrax posed as a bioweapon and had nearly unrestricted access to the strain and facility.[13] But, in July 2008, as the U.S. Department of Justice ("DOJ") finalized its case against him, Dr. Ivins took his own life.[14] The investigation ultimately incurred over 600,000 work hours from various investigative resources, involved over 10,000 interviews, and over 5,750 grand jury subpoenas, yet resulted in zero indictments.[15] Furthermore, doubt surrounded the FBI's conclusion that Ivins was solely at fault.[16] In 2010, microbiologist Henry Heine testified before a U.S. National Research Council ("NRC") that the spores in question could not have come from the USAMRIID lab due to the intensive work required to produce the quantity observed.[17] Accordingly, the DOJ conceded in court documents filed on July 15, 2011, that the USAMRIID lab did not possess the equipment necessary to turn liquid anthrax into the observed powder.[18]

The 2001 Amerithrax Attack was the practical culmination of many experts' fears; they had complained for decades about the inadequate legal and practical safeguards surrounding dangerous

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[11] *See* Scott Shane & Eric Lichtblau, *Scientist Is Paid Millions by U.S. in Anthrax Suit*, N.Y. TIMES, (Jun. 28, 2008) https://www.nytimes.com/2008/06/28/washington/28hatfill.html; *see* also AMERITHRAX INVESTIGATIVE SUMMARY, *supra* note 1, at 26–28.

[12] *See* AMERITHRAX INVESTIGATIVE SUMMARY, *supra* note 1, at 6–7.

[13] *See id.* at 19.

[14] *See id.* at 41.

[15] *See id.* at 4.

[16] *See Colleague Says Anthrax Numbers Add Up to Unsolved Case*, PROPUBLICA (Apr. 23, 2010), https://www.propublica.org/article/colleague-says-anthrax-numbers-add-up-to-unsolved-case.

[17] *See id.*

[18] *See* Mike Wiser, Greg Gordon & Stephen Engelberg, *Justice Department Filing in West Palm Beach Court Contradicts FBI findings in anthrax case*, THE PALM BEACH POST (Jul. 19, 2011), https://www.palmbeachpost.com/story/news/2011/07/19/justice-department-filing-in-west/7179743007/.

biological agents.[19] The attack renewed calls for updates to the legal framework surrounding dangerous agents and spurred increased preparation by local, state, and federal officials for a potential attack.[20] The urgency felt in the event's immediate aftermath, however, would taper as the years-long investigation dragged on without conclusion, and the court cases surrounding the matter were settled.[21] Biological agents and bioweapons have received renewed attention in the wake of the COVID-19 pandemic, which displayed the efficacy of pathogens as agents of change and disruption irrespective of their release mechanism.[22] Furthermore, bioweapons and the domestic law surrounding them has received increased attention as medical and scientific advancements have increased the probability of proliferation by state actors and non-state actors alike.[23] Bioweapons have also gained infamy amid a series of high-profile missteps in the medical technologies space that cast doubt on the procedural and legal safeguards currently in place.[24] Thankfully, the likelihood of the proliferation of a biological weapon by a disorganized group or single individual remains unlikely, albeit possible.[25] Nonetheless, the possibility of proliferation has increased, especially with the

[19] *See generally* D.A. Henderson, *Bioterrorism as a Pub. Health Threat*, 4 EMERGING INFECTIOUS DISEASES 488 (1998).
[20] *See generally* Heather Dagen, *Bioterrorism: Perfectly Legal*, 49 CATH. U. L. REV. 535 (2000).
[21] *See, e.g.,* Scott Shane, *U.S. Settles Suit Over Anthrax Attacks*, N.Y. TIMES (Nov. 29, 2011), https://www.nytimes.com/2011/11/30/us/anthrax-victims-family-to-receive-2-5-million-in-settlement.html; *see also* Shane & Lichtblau, *supra* note 11.
[22] *See generally* Manal Cheema & Ashley Deeks, *Prosecuting Purposeful Coronavirus Exposure as Terrorism*, LAWFARE (Mar. 31, 2020), https://www.lawfareblog.com/prosecuting-purposeful-coronavirus-exposure-terrorism.
[23] *See* Andy Weber & David F. Lasseter, *America is Failing to Fight Chemical and Biological Weapons — but We can Change That*, THE HILL (Dec. 28, 2022). https://thehill.com/opinion/national-security/3786808-america-is-failing-to-fight-chemical-and-biological-weapons-but-we-can-change-that/.
[24] *See generally* Sonia Ben Ouagrham-Gormley, *Barriers to Bioweapons: Intangible Obstacles to Proliferation*, 36 INT'L SEC. 80 (2012).
[25] *See id.* at 82–83.

widespread distribution of knowledge via the Internet and the rise of artificial intelligence.[26]

Accordingly, bioterrorism remains a persistent threat to the U.S.'s national security.[27] The existing criminal statutory framework, as found in 18 U.S.C. § 175, requires modification to ensure that all facets of government are equipped with the necessary resources to adequately deter and address threats. This comment argues that the current statutory framework should be subdivided into multiple statutes that govern different types of conduct, which would generally fall under the broad term of bioterrorism. This would allow for broader use and more contextually appropriate sentencing for violations of the bioterrorism statute based on the type and severity of the conduct at issue. This comment also criticizes the existing statutory framework for its incomplete approach, which leaves significant gaps and makes successful prosecution nearly impossible under such construction.

Section I of this comment examines the historical development as well as the use of bioweapons and biological agents, from antiquity to World War I ("WWI"). Section II describes the international legal framework that developed in response to developments in the 20th century, and then examines the domestic legal framework that arose in response. Section III analyzes the shortcomings of the existing domestic statutory framework through the lens of existing caselaw and accepted statutory interpretation, demonstrating that they cannot be successfully used without employing an overbroad interpretation. Lastly, Section IV recommends comprehensive changes to the existing framework to promote adherence to international customs and law. Section IV recommends selective subdivision of the existing statute and better-

[26] *See id.* at 82–83 (displaying that development of a weapon by relying on internet information is possible); *see also* Janet Egan & Eric Rosenbach, *Biosecurity in the Age of AI: What's the Risk?*, BELFER CENTER FOR SCEINCE AND INTERNATIONAL AFFAIRS (Nov. 6, 2023), https://www.belfercenter.org/publication/biosecurity-age-ai-whats-risk.

[27] *See* Weber & Lasseter, *supra* note 23.

defined terms to cover a wider breadth of behavior while promoting effective prosecution.

I. BIOWEAPONS AND BIOTERRORISM HISTORY

A. *Antiquity and Middle Ages Bioweapons*

Since antiquity, individuals, societies, and groups have sought to employ biological agents to gain strategic advantages during wartime and peace alike.[28] One of the earliest documented wartime use of a biological agent dates to 190 B.C.E., when the Carthaginian general Hannibal reportedly threw clay pots filled with venomous snakes onto an approaching enemy ship.[29] Hannibal's army specifically targeted the ship of Eumenes II, the leader of the Pergamon Navy, inciting disarray and miscommunication.[30] The attack succeeded, and the Pergamon Navy retreated.[31] However, modern herpetologists have cast significant doubt on the validity of this heroic anecdote, noting that modern-day Turkey, the geographic location of the attackers' stronghold, was devoid of large gatherings of venomous snakes necessary to employ this tactic successfully.[32]

Collecting venomous snakes would have been a tedious and lengthy task, that would have taken months and incurring significant risk to the soldiers.[33] Instead, herpetologists suggest that Hannibal's soldiers likely collected non-venomous snakes, the types that gather in large numbers under warm rocks and other areas, due to the soldiers' lack of herpetological knowledge and under the assumption that their enemies would not care nor know the difference in the heat of the moment.[34] Regardless, this early application was a practical and theoretical example of the efficacy of bioweapons. It illustrated how weapons can advance a wartime purpose while also stoking fear over

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[28] *See* Neil Metcalfe, *A Short History of Biological Warfare*, 18 MED., CONFLICT AND SURVIVAL, 271, 271–72 (2002).
[29] *See* Adrian Burton, *Bithynian Snake Bombs*, 19 FRONTIERS IN ECOLOGY AND THE ENVIRONMENT 196 (2021); *see also* Metcalfe, *supra* note 28, at 272.
[30] *See* Burton, *supra* note 29.
[31] *See id.*
[32] *See id.*
[33] *See id.*
[34] *See id.*

the biological agents themselves and their potential future use.[35] Despite its success, Hannibal never used the tactic again, likely due to its time-intensive nature.[36] He lost the war only years later.[37]

The use of bioweapons reappeared in 1346 A.D., with the Mongols fighting their Genoese counterparts over key trading routes adjoining the Black Sea.[38] In addition to the ongoing war, a plague was ravaging much of Eastern Europe and West Asia, including the Mongolian army.[39] The Mongols were acutely aware of the impracticality of winning against a heavily fortified Genoise Army, so they opted to replace their standard catapult loads with plague-infested bodies.[40] They launched the infected corpses over the walls of the enemy base before retreating, inserting a disease into the main Genoese compound that would wreak havoc for years to come.[41] This account is, however, questioned by historians, who note that while the plague was likely spread through direct contact with an infected body, it was equally possible that it was spread through alternative means.[42] In any case, there is little doubt that the insertion of infected carcasses and the conditions surrounding them accelerated the disease, increasing its efficacy and making a sustained war untenable.[43] In an equally lurid incident, during this period, the Spanish laced wine to be consumed by the French with the blood of Leprosy patients, but little is known about the efficacy or logistics of this attempt.[44]

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[35] Burton, *supra* note 29.
[36] Patrick Hunt & William Culican, *Hannibal,* BRITTANICA, https://www.britannica.com/biography/Hannibal-Carthaginian-general-247-183-BCE (last visited Mar. 17, 2024).
[37] *See id.*
[38] *See* W. Seth Carus, *A Short History of Biological Warfare: From Pre-History to the 21st Century*, CENTER FOR THE STUDY OF WEAPONS OF MASS DESTRUCTION, OCCASIONAL PAPER NO. 12, 5–6 (2017).
[39] *See e.g.,* Metcalfe, *supra* note 28 at 272; Mark Wheelis, *Biological Warfare at the 1346 Siege of Caffa*, 8 EMERGING INFECTIOUS DISEASES 971–75 (2002); Carus, *supra* note 38, at 6–7.
[40] *See* Carus, *supra* note 38, at 6
[41] *See id.*
[42] *See id.*
[43] *See id.*
[44] *See* Metcalfe, *supra* note 28, at 272.

B. *Westward Expansion*

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[45] *See* Neil Metcalfe, *A Short History of Biological Warfare*, 18 MED., CONFLICT AND SURVIVAL, 271, 271–72 (2002).
[46] *See* Adrian Burton, *Bithynian Snake Bombs*, 19 FRONTIERS IN ECOLOGY AND THE ENVIRONMENT 196 (2021); *see also* Metcalfe, *supra* note 28, at 272.
[47] *See* Burton, *supra* note 29.
[48] *See id.*
[49] *See id.*
[50] *See id.*
[51] *See id.*
[52] Burton, *supra* note 29.

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[53] Patrick Hunt & William Culican, *Hannibal,* BRITTANICA, https://www.britannica.com/biography/Hannibal-Carthaginian-general-247-183-BCE (last visited Mar. 17, 2024).

[54] *See id.*

[55] *See* W. Seth Carus, *A Short History of Biological Warfare: From Pre-History to the 21st Century*, CENTER FOR THE STUDY OF WEAPONS OF MASS DESTRUCTION, OCCASIONAL PAPER NO. 12, 5–6 (2017). .

[56] *See e.g.,* Metcalfe, *supra* note 28 at 272; Mark Wheelis, *Biological Warfare at the 1346 Siege of Caffa*, 8 EMERGING INFECTIOUS DISEASES 971–75 (2002); Carus, *supra* note 38, at 6–7.

[57] *See* Carus, *supra* note 38, at 6.

[58] *See id.*

[59] *See id.*

[60] *See id.*

[61] *See* Metcalfe, *supra* note 28, at 272.

C. *Sabotage, Fear, and Widespread Investment*

WWI marked a paradigm shift in bioweapons, with advancements in scientific and medical knowledge shepherding an age of intentional and covert bioweapon use and development.[62] The Germans were the first to develop and use biological weapons during this period.[63] The Germans perpetrated an intentional, multifaceted, and clandestine campaign that sought to undermine enemy operations through the strategic, limited use of biological agents.[64] During this period, Germany used biological agents, including anthrax, to infect animals and livestock, which provided for the transportation of munitions and other wartime necessities.[65]

The Germans also attempted to sabotage U.S. factories and critical infrastructure by inserting biological agents that would affect the on-site working conditions.[66] Whether those efforts were successful remains unclear, with reviews indicating that the effects were minor at most. Regardless, this marked a definite shift in the wartime paradigm.[67] This was the first use of biological weapons that relied heavily on a complex medical and scientific understanding of the underlying agents.[68] Though previous actors knew that agents were some threat or had some desired effect, and they may have understood how different agents caused different maladies,[69] their understanding of many agents was primitive, and their use haphazard.[70] A deep understanding of the microbiological underpinnings was unique to the Germans and this period.[71] Second, and equally significant, this effort was undertaken clandestinely during wartime.[72] Unlike previous uses, there was an intent to conceal

[62] *See* Carus, *supra* note 38, at 12.
[63] *See id.*
[64] *See id.* at 12–13.
[65] *See id.*; *see also* Metcalfe, *supra* note 28, at 273–74.
[66] *See* Carus, *supra* note 38, at 13.
[67] *Id.*
[68] *See id.*
[69] *See id.* at 7.
[70] *See id.* at 15.
[71] *See id.* at 13.
[72] *See id.*

the activities to inflict maximum damage.[73] This sowed distrust between the nations and laid the groundwork for various biological weapons programs that would develop in the future.[74] In response to WWI and the use of biological weapons, international law regulating bioweapons began to develop.[75] At the same time, "Belgium, Canada, France, Great Britain, Italy, the Netherlands, Poland, and the Soviet Union all began to run basic research programs."[76]

The Soviet Union began its widespread biological weapons research in 1926.[77] In the years preceding WWI, Russia had amassed several scientific and medical experts on the plague and conducted significant inquiries into bacteriology and virology.[78] By 1917, Russia amassed thirty labs dedicated to bacteriology, up from eleven in 1902.[79] During this period, however, Russia was engaged in bona fide medical and scientific research with little interest in using that research during the war.[80] Russia became interested in offensive biological agents after they became the target of German sabotage during WWI.[81] Russia's livestock was infected via sugar cubes laced with glass and anthrax by German saboteur Robert van Rosen.[82] In 1926, the Soviet Union ("USSR") established a small bioweapons lab headed by Dr. A.N. Ginsburg.[83] The lab was focused on weaponizing anthrax.[84] The USSR would continue to cultivate this program, acquiring additional pathogens and expanding the size and scope of their laboratory programs in advance of World War II ("WWII").[85] The program experienced setbacks, however, during the Great Terror when numerous scientists and researchers were executed.[86] During

[73] *See id.* at 14.
[74] *See id.*
[75] *See id.*
[76] *See* Metcalfe, *supra* note 28, at 274.
[77] *See* ANTHONY RIMMINGTON, STALIN'S SECRET WEAPON: THE ORIGINS OF SOVIET BIOLOGICAL WARFARE 24 (2018).
[78] *See id.* at 15.
[79] *See id.*
[80] *See id.* at 15–17.
[81] *See id.* at 16–17.
[82] *See id.* at 18.
[83] *See* RIMMINGTON, *supra* note 77, at 23.
[84] *See id.*
[85] *See id.* at 33.
[86] *See id.* at 80–81.

this period, the leader of the program, Ivan Velikanov, and his wife were both arrested and executed.[87] Nonetheless, the program continued after that with testing, experimentation, and development lasting through WWII.[88]

Germany's use of biological weapons in WWI also inspired the Japanese to create a biological weapons program — one that would come to gain infamy for its human rights violations and, including the use of biological to kill thousands.[89] Ishii Shiro, a lieutenant general in the Japanese military, spearheaded the effort to develop biological weapons.[90] The Japanese established Unit 731, their biological weapons research division, in 1936, under the official title of the Epidemic Prevention and Water Supply Departments.[91] Unit 731 immediately began testing pathogens on human subjects, including anthrax, various strands of the plague, smallpox, typhoid, and cholera.[92]

Soon after, in 1939, the Japanese began conducting more extensive field trials in south and central China.[93] The largest of these tests occurred on October 27, 1940, when the Japanese Air Force undertook a coordinated assault on Ningbo, a southeastern city that served as a strategic point and stronghold for the Chinese Army.[94] Rather than using conventional bombs, the Japanese Air Force dropped hollow clay missiles loaded with cotton, grain, and fleas infected with the plague.[95] The fleas then dispersed and infected the surrounding civilian population, resulting in the death of 106 people over the following thirty-six days.[96] In 1942, the Japanese began conducting these drops regularly, using cholera instead of the plague, which resulted in 10,000 casualties.[97] However due to the uncontrollable nature of the pathogen, this effort also unintentionally

[87] *See id.* at 81.
[88] *See id.* at 98.
[89] *See* JING-BAO NIE, JAPAN'S WARTIME MEDICAL ATROCITIES 1, 5 (2010).
[90] *Id.* at 23.
[91] *Id.* at 23–24.
[92] *Id.* at 25–26.
[93] *See id.* at 25.
[94] *Id.* at 27.
[95] *Id.* at 27.
[96] *See* JING-BAO NIE, *supra* note 89, at 28.
[97] *See id.*

killed 1,700 Japanese soldiers, hindering the broader war effort.[98] The Japanese attempted to rework the bomb for increased efficacy and controllability, but surrendered before widespread use of this revised weapon.[99]

WWII created a widespread push to recognize and combat the danger biological and chemical weapons posed.[100] Countries recognized the atrocities that occurred on the battlefield with the use of bioweapons, and the discussion turned towards creating a widespread agreement to prohibit bioweapons writ large.[101]

II. CONVENTIONS, AGREEMENTS, AND STATUTES

A. *Early Attempts*

The first documented attempt at an international agreement prohibiting biological weapons was a 1675 accord between Germany and France, which broadly prohibited the use of "poison bullets."[102] As noted *supra*, Louis XIV, the French monarch at the time of the agreement, was vehemently opposed to bioweapons, as demonstrated by his decision to suppress innovation in the field.[103] The agreement he struck with the Germans signaled that poison-based weaponry was becoming a broader issue, and that their use could violate evolving standards of decency even in times of war.[104]

The next significant development for bioweapons in the law of war came in 1863, at the height of the Civil War.[105] U.S. Army General Order No. 100, the Lieber Code, was an expansive 157-article document that governed the conduct of the Union Army and the

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[98] *See id.*
[99] *See id.*
[100] *See id.*
[101] *See* id.
[102] *See* JEFFREY K. SMART, *History of Chemical and Biological Warfare: an American Perspective*, *in* MEDICAL ASPECTS OF CHEMICAL AND BIOLOGICAL WARFARE 13 (Frederick R. Sidell, Ernest T. Takafuji & David R. Franz eds., 1997).
[103] *See* Metcalfe, *supra* note 28, at 272.
[104] *See id.* at 273.
[105] *See* Jenny Gesley, *The "Lieber Code" – the First Modern Codification of the Laws of War,* LIBRARY OF CONGRESS*, In Custodia Legis: Law, Librarians of Congress* (Apr. 4, 2018), https://blogs.loc.gov/law/2018/04/the-lieber-code-the-first-modern-codification-of-the-laws-of-war/.

soldiers operating therein.[106] The Code was a predecessor to today's Department of Defense Law of War Manual.[107] Franz Lieber, an influential German American lawyer, drafted the Code at the request of then-President Abraham Lincoln.[108] Article 70 specifically prohibited "[t]he use of poison in any manner, be it to poison wells, or food, or arms is wholly excluded from modern warfare."[109] The efficacy of the Code in governing the conduct of the period is uncertain.[110] Still, the document signaled a renewed commitment to evolving standards of warfare and a continuing focus on the role of bioweapons.[111]

Ten years later, limited progress was made on the international front with the 1874 Brussels Declaration, "the draft of an international agreement concerning the laws and customs of war submitted by the Russian government" and reviewed by a conference of fifteen European nations.[112] The declaration was not ratified due to objections by at least one of the attending parties.[113]

B. *International Agreements and Broken Promises*

Though it never attained the status of international law, the 1874 Brussels Declaration served as the basis for the 1899 and 1907 Hague Conventions.[114] The latter prohibited the use of "poison or poisoned arms."[115] There were signs of trouble even at this early stage, however, as numerous signatories to the 1899 Convention refused to sign the amended 1907 version, signaling that some were wavering on

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[106] *See id.*
[107] Quinta Jurecic, *Throwback Thursday: The Lieber Code*, LAWFARE (Jul. 23, 2015), https://www.lawfaremedia.org/article/throwback-thursday-lieber-code.
[108] Gesley, *supra* note 105.
[109] The Lieber Code, General Orders No. 100, Art. 70 (Apr. 24, 1863).
[110] Jurecic, *supra* note 107.
[111] *See id.*
[112] *See* International Humanitarian Law Databases, *Project of an International Declaration concerning the Laws and Customs of War. Brussels, 27 August 1874.*, ICRC.ORG (2023), https://ihl-databases.icrc.org/en/ihl-treaties/brussels-decl-1874?activeTab=historical.
[113] *See id.*
[114] *See* International Humanitarian Law Databases, *Regulations concerning the Laws and Customs of War on Land. The Hague, 29 July 1899.*, ICRC.ORG (2022), https://ihl-databases.icrc.org/en/ihl-treaties/hague-conv-ii-1899.
[115] *See id.*

their earlier commitments and, more broadly, wary of the ramification such an agreement could have on their safety and security.[116] Accordingly, the document did little to bind any of the parties, and many signatories chose to continue their research in the years after.[117]

Only after WWI was there a serious and renewed conversation about the use of bioweapons in the form of the 1925 Geneva Protocol. The 1925 Geneva Convention focused extensively on chemical agents and their usage during WWI, and touched upon banning "the use of bacteriological methods of warfare."[118] This addition was requested by Poland, which correctly believed that the Soviet Union possessed a robust bioweapons program.[119] Many countries signed the Convention, but its impact was limited, as it contained an implied right to respond in kind to any type of chemical or biological attack, increasing the incentive for continued possession of biological agents.[120] Even more ironically, the 1925 Geneva Protocol unintentionally perpetuated biological warfare by inspiring Ishii Shiro—the commander of the Japanese Bioweapons Program—to research biological weapons after observing that Western powers feared them, and thus wanted them banned.[121]

By the end of WWII, almost every country was involved in biological weapons research and development, often with aspirations of offensive biological weapons deployment.[122] But as time progressed, the question of international prohibition once again became salient, and the United Nations ("U.N.") General Assembly and the Committee on Disarmament drafted an agreement to prohibit

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[116] *See id.*

[117] *See generally* RIMMINGTON, *supra* note 77, at 18; *see also* JING-BAO NIE, *supra* note 89.

[118] International Committee on the Red Cross, *Protocol for the Prohibition of the Use of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare. Geneva, 17 June 1925*, ICRC., https://ihl-databases.icrc.org/en/ihl-treaties/geneva-gas-prot-1925 (Last visited Feb. 28. 2024).

[119] *See* Carus, *supra* note 38, at 22.

[120] *See id.* at 14.

[121] *See id.* at 15.

[122] *See id.* The United Kingdom, Canada, and a handful of private organizations engaged in limited research throughout the era but had far less extensive programs than the Soviet Union and Japan. *See generally* Metcalfe, *supra* note 28.

biological weapons.[123] Soon thereafter, the Committee presented the 1972 Convention on the Prohibition of the Development, Production, and Stockpiling of Bacteriological (Biological) and Toxin Weapons (the "BWC").[124] The agreement prohibits the "development, stockpile, production, or transfer of biological agents and toxins of 'types and quantities' that have no justification for protective or peaceful use."[125] Some countries have accused others of breaking the treaty's provision after becoming a signatory; most notably, the U.S. accused the Soviet Union of passing mycotoxins to communist allies during the early 1980s, but the U.N. report on the matter was inconclusive.[126] The BWC remains in effect today, and only nine countries have either refused to sign or failed to ratify it.[127]

As a result of the BWC, the U.S. began seriously considering the domestic actions needed to prevent biological and chemical weapons perpetrated by a state or non-state actor.[128] Experts and senior officials repeatedly testified before Congress to note the inadequacy of domestic law surrounding bioterrorism, urging Congress to act.[129] Congress did act, and used the BWC as a framework for the legislation.[130] The House voted on the Biological Weapons Anti-Terrorism Act of 1989 on May 8, 1990, passing it 408

[123] *See* Carus, *supra* note 38, at 39–40.
[124] *See* History of the Biological Weapons Convention – UNODA, UNITED NATIONS, https://www.un.org/disarmament/biological-weapons/about/history/ (Last visited Feb. 28, 2024).
[125] Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction, Apr. 10, 1972, 26 U.S.T. 583, 1015 U.N.T.S. 163 [hereinafter BWC].
[126] See generally Jonathan B. Tucker, *The "Yellow Rain" Controversy: Lessons for Arms Control Compliance*, 8 THE NONPROLIFERATION REVIEW 25 (2001).
[127] *See* The Nuclear Threat Initiative, BIOLOGICAL WEAPONS CONVENTION (BWC), https://www.nti.org/education-center/treaties-and-regimes/convention-prohibition-development-production-and-stockpiling-bacteriological-biological-and-toxin-weapons-btwc/ (Last visited Feb. 28. 2024).
[128] *See* Dagen, *supra* note 20, at 536–37 n.2.
[129] *See id.* at 539–40.
[130] *See id.* at 41.

to 0.[131] President George H.W. Bush signed the Act into law on May 22, 1990.[132]

Scientific and pragmatic barriers limit the possibility of widespread proliferation of biological weapons by even the most advanced state and non-state actors; as a result, it is improbable that such weapons can be clandestinely developed and deployed without detection and interception.[133] Even a remote possibility remains a troubling threat, however. A survey of senior executive officials, legislators, and experts, conducted in 2006, indicated that 52 percent of respondents believed the bioweapons and bioterrorism threat was equal to, or greater than, the threat of nuclear weapons; and a staggering 74 percent considered it a more significant threat than chemical weapons.[134] The most cited reason: the "increasing availability of dual-use know-how technology and equipment," followed closely (at 67 percent) by "revolutions in life science creating technologies and know-how that makes biological weapon acquisition easier."[135] Moreover, 54 percent of those polled believed a bioweapons attack was *somewhat* likely to take place within ten years, with an additional 27 percent stating that they believed it *very* likely.[136] Those estimates can now be deemed inaccurate, but the concern remains ever-present.[137] Accordingly, modern bioterrorism jurisprudence needs to develop parallel to the complex developments in science and medicine to prevent abuse and adequately provide a remedy for the

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[131] *See* GovTrack, US, BIOLOGICAL WEAPONS ANTI-TERRORISM ACT OF 1989 (1990 - H.R. 237), https://www.govtrack.us/congress/bills/101/hr237 (last visited Jan 5, 2023).
[132] *Id.*
[133] *See* Ouagrham-Gormley, *supra* note 28, at 46.
[134] *See* CENTER FOR STRATEGIC AND INTERNATIONAL STUDIES, THE BIOLOGICAL WEAPONS THREAT AND NONPROLIFERATION OPTIONS 12 (2006), https://carnegieendowment.org/files/BIO-survey-final-report.pdf.
[135] *Id.* at 21.
[136] *Id.* at 19.
[137] *See, e.g.*, *The Department of Defense's Newly Released Biodefense Posture Review*, CENTER FOR STRATEGIC AND INTERNATIONAL STUDIES (Aug. 23, 2023), https://www.csis.org/analysis/department-defenses-newly-released-biodefense-posture-review ("the Department of Defense and the nation are at a pivotal moment in biodefense as we face an unprecedented number of complex threats as outlined in the National Defense Strategy and the National Biodefense Strategy.").

wide range of potential activities that serve as a precursor to more widespread bioterrorism.

To achieve this, the current governing statute, 18 U.S.C. § 175, should be subdivided into multiple sub-parts that apply different standards to different types of conduct. This will allow for more contextually appropriate prosecution and sentencing based on the severity of the conduct at issue and the severity of the underlying threat. This analysis provides a revised framework for this statute in pursuit of this goal. Section III addresses the shortcomings of the existing statutory language and notes how the breadth of the existing statute renders it unusable without running afoul of legal and policy considerations. Section IV proposes comprehensive revisions to the current statute to prevent and provide for varying punishment for different degrees of culpability with sufficient limitation to prevent abuse. Section V counters the arguments that the current existing federal framework provides adequate relief through non-bioterrorism-related statutes, and further refutes the argument that the framework's breadth intentionally allows for prosecutorial and judicial discretion.

III. STATUTORY SHORTCOMINGS

A. *Ambiguous Language and Excess Modifiers*

The preeminent bioterrorism statute in the U.S. Criminal Code is 18 U.S.C. § 175 ("175").[138] 175 is divided into three parts.[139] The first two parts delineate two distinct crimes related to biological agents, and the third part provides definitions upon which the preceding two jointly rely.[140] The section largely mirrors other criminal statutes in language and form.

1. The broad scope of 18 U.S.C. § 175(a) discourages its use in criminal prosecutions

175(a), the first subsection of the statute, covers instances in which an individual or group, through their actions, seeks to use a

[138] *See* 18 U.S.C. § 175.
[139] *See id.*
[140] *See id.*

biological agent as a weapon or possesses dangerous biological agents with the intent to transfer it for use as a weapon.[141] The statute prohibits domestic and foreign activity, has extraterritorial effect, and applies a strict penalty for violators.[142] The intent is clear: Congress sought to provide a criminal penalty for those who act with ill intent while working with or seeking biological agents, and in doing so codified existing international law.[143] Still, the language of the statute is ambiguous and provides little clarity. This is mainly a result of the author's infatuation with the disjunctive modifier "or," which appears nine times in the eighty-one-word section, constituting eleven percent of the total statutory language. This continues to add to the section when a new section or sub-section would have been more appropriate. By doing so, the same section confusingly toggles between domestic and foreign conduct, encompasses both inchoate and completed offenses and criminalizes two patently different activities. As apparent from its text, 175(a) seeks to address a wide range of conduct:

> Whoever knowingly develops, produces, stockpiles, transfers, acquires, retains, or possesses any biological agent, toxin, or delivery system for use as a weapon, or knowingly assists a foreign state or any organization to do so, or attempts, threatens, or conspires to do the same, shall be fined under this title or imprisoned for life or any term of years, or both. There is extraterritorial Federal jurisdiction over an offense under this section committed by or against a national of the United States.[144]

As a result of the statute's breadth, and the consequent legal and practical issues in bringing prosecutions under it, prosecutors are hesitant to do so. Accordingly, there have been only a few convictions under the statute. One of the few convictions under 175(a) came in *United States v. Levenderis*, in which the defendant ordered materials to create ricin, a natural toxin found in castor beans,[145] with the further intent of placing the ricin in the entryway of his burning home to

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[141] *Id.*
[142] *See id.*
[143] *See* 18 U.S.C. § 175.
[144] 18 U.S.C. § 175(a).
[145] *See Facts About Ricin*, CTRS. FOR DISEASE CONTROL & PREVENTION (2018), https://emergency.cdc.gov/agent/ricin/facts.asp#:~:text=Ricin%20is%20a%20poison%20found.

poison and kill emergency responders, his stepfather, and himself.[146] At trial, Levenders was convicted of four counts, including one under 175(a) and two under 175(b).[147] He was sentenced to six years.[148]

Another successful prosecution under 175(a) came in *United States v. Le*, in which the defendant purchased ricin on the dark web to kill a hospital patient known to him.[149] The FBI conducted a controlled drop of the ordered pills to catch him in the act of collecting them, and arrested him on the scene.[150] The defendant, after losing at trial, appealed on the ground that the federal statute impermissibly regulated purely local conduct.[151] The 2nd Circuit Court of Appeals rejected this argument, finding that 175(a) was permissible under the Commerce Clause.[152]

2. The language of section 175(b) is even broader than section 175(a)

175(b) covers a broader array of conduct than 175(a), only requiring a defendant to possess an unreasonable type or quantity of various hazardous materials to be found guilty.[153] There are no actions that need to be taken other than "unreasonable possession."[154]

> Whoever knowingly possesses any biological agent, toxin, or delivery system of a type or in a quantity that, under the

[146] *See* Press Release, U.S. Att'y's Off. N. Dist. Of Ohio, Dep't of Just., Akron Man Convicted Of Possessing Ricin For Use As A Weapon (Mar. 12, 2015), https://www.justice.gov/usao-ndoh/pr/akron-man-convicted-possessing-ricin-use-weapon.

[147] *See* Press Release, U.S. Att'y's Off. N. Dist. Of Ohio, Dep't of Just., Akron Man Sentenced to Six Years in Prison for Possessing Ricin (Mar. 18, 2015), https://www.justice.gov/usao-ndoh/pr/akron-man-sentenced-six-years-prison-possessing-ricin.

[148] *Id.*

[149] *See* Press Release, U.S. Att'y's Off. S. Dist. of N.Y., Dep't of Just., New York Man Sentenced In Manhattan Federal Court To 16 Years In Prison For Attempting To Acquire Deadly Toxin, Ricin (Mar. 8, 2016), https://www.justice.gov/usao-sdny/pr/new-york-man-sentenced-manhattan-federal-court-16-years-prison-attempting-acquire.

[150] *See id.*

[151] *See* United States v. Cheng Le, 902 F.3d 104, 109 (2d Cir. 2018).

[152] *See id.*

[153] *See id.*

[154] *See generally id.*

> circumstances, is not reasonably justified by a prophylactic, protective, bona fide research, or other peaceful purpose shall be fined under this title, imprisoned not more than ten years, or both. In this subsection, the terms "biological agent" and "toxin" do not encompass any biological agent or toxin that is in its naturally occurring environment if the biological agent or toxin has not been cultivated, collected, or otherwise extracted from its natural source.[155]

In practice, 175(b)'s scienter requirent functions much more like a "negligence" standard than a "knowingly" one, due to the compounding nature of the unreasonable quantity and the mere knowledge of possession that is required.

175(b) does, however, impose some further requirements to prevent prosecutorial error or overreach. Notably, 175(b) only forbids possession of substances that were cultivated, collected, or extracted.[156] This addendum serves as a safeguard from abuse, assuring that those possessing natural substances are not erroneously charged for merely possessing a biological agent for an otherwise innocuous purpose.

In spite of this exclusion, 175(b) provides a blanket fallback for cases that would be difficult to charge under 175(a) but still possessing a substantial degree of culpability. Even so, prosecutors are similarly hesitant to use this charge.[157]

B. *Lingering Prosecutorial Hesitation*

Prosecutors remain reluctant to prosecute cases under either 175(a) or 175(b) despite the broad authority they afford. A 2020 Memo by then-Deputy Attorney General Jeffrey Rosen to all federal law enforcement aptly demonstrates this hesitation.[158] The memo delineated the statutes that could be used to prosecute matters related to the COVID-19 pandemic.[159] Among them was a wide array of civil and criminal statutes, including 18 U.S.C § 1343 (wire fraud); 15

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[155] 18 U.S.C. § 175(b).
[156] *See id.*
[157] *See*, *e.g.*, Criminal Complaint, United States v. Curry, No. 8:20-mj-01367-AAS (M.D. Fla. Apr. 7, 2020).
[158] *See* Memorandum from the Deputy Att'y Gen. on Dep't of Just. Enf't Actions Related to COVID-19, 2 (Mar. 24, 2020) [hereinafter Rosen Memo].
[159] *See generally id.*

U.S.C. § 1263 (misbranded and adulterated drugs); and 15 U.S.C. § 1 (the Sherman Antitrust Act).[160] Section 175 was briefly discussed in the memo's third paragraph. The DOJ's position was that, "because coronavirus appears to meet the statutory definition of a 'biological agent' under 18 U.S.C. § 178(1), such acts potentially could implicate the nation's terrorism-related statutes."[161] Despite being written by some of the nation's top attorneys, this statement was couched in uncertain language: "appears," "potentially," and "could."[162] While it could be taken as mere lawyerly caution, this equivocal language appeared nowhere else in the memo's discussion of some ten other statutes.

Perplexingly, COVID-19 appears to fit more cleanly into the statutory definition of a "biological agent" than Rosen's memo suggested. The definition Rosen cited states that a biological agent includes "any microorganism (including, but not limited to, bacteria, viruses, fungi, rickettsiae or protozoa), or infectious substance, or any naturally occurring, bioengineered or synthesized component of any such microorganism or infectious substance, capable of causing— (A) death, disease, or other biological malfunction in a human, an animal, a plant, or another living organism."[163] The CDC describes COVID-19 as a "disease caused by a virus" placing it squarely within this definition.[164] The Department of Justice's equivocation is thus better attributed to a discomfort with 175 than the pretextual ambiguity of the definition.

The DOJ similarly balked when testing the applicability of 175 in court, even when provided ample reason and opportunity to do so.[165] In *Barela v. United States*, a woman entered a convenience store proclaiming, "I have COVID."[166] The woman coughed audibly and

[160] *See id.* at 2–3.
[161] *Id.* at 3.
[162] *See id.*
[163] 18 U.S.C. § 178(1).
[164] *About COVID-19*, CENTERS FOR DISEASE CONTROL AND PREVENTION (2023), https://www.cdc.gov/coronavirus/2019-ncov/your-health/about-covid-19.html (last visited Apr. 14, 2024).
[165] *See, e.g.*, Criminal Complaint, *supra* note 157, at 1, 9.
[166] *See* United States v. Barela, No. 21-10231, 2022 U.S. App. LEXIS 35418 at 4 (9th Cir. Dec. 22, 2022).

advised staff and customers to stay away while placing merchandise in her bag before leaving without paying.[167] This action appears to fit squarely within 175(a) as the defendant knowingly possessed a biological agent and used the threat of transfer of the virus without a peaceful purpose, and did so to cause fear and panic.[168]

Nonetheless, the case was pursued not under Section 175, but rather 18 U.S.C. § 1951 (The Hobbes Act), which covers robbery affecting interstate commerce.[169] To prove such a charge, the government had to show that there was actual or threatened force.[170] The government did so in this case by relying heavily on the threat of passing COVID to anyone who intervened.[171] 175 was never mentioned or pursued in this case.[172]

On appeal, the 9th Circuit Court of Appeals found that the threat of COVID constituted fear of injury under the Hobbes Act.[173] It may be argued that the defendant's actions were accurately classified as robbery, and that more novel prosecutorial arguments were not necessary when relief under the Hobbes Act was available. However, the government has balked at using 175(a) or 175(b) even when comparable relief is not available.[174]

In *United States v Curry*, a subject who was being arrested for a domestic disturbance coughed at an officer, stating that he had COVID.[175] After being released on bond, the individual was again

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[167] *See id.* at 4–5.
[168] *See* 18 U.S.C. § 175(a).
[169] *See Barela*, 2022 U.S. App. LEXIS 35418 at 4.
[170] *See* 18 U.S.C. § 1951.
[171] *See* U.S. 9th Cir., *21-10231 USA v. Carmelita Barela*, YOUTUBE (Oct. 18, 2022), https://www.youtube.com/watch?v=8VlCDwacQ0A.
[172] *See id.*
[173] *See* Bob Egelko, *Court upholds conviction for woman who coughed at store clerks, claiming COVID infection*, S.F. CHRONICLE (Dec. 25, 2022), https://www.sfchronicle.com/bayarea/article/Court-upholds-conviction-for-woman-who-coughed-at-17672911.php.
[174] *See e.g., Man arrested for harassment of public servant after coughing on SAPD officer, claiming to have COVID-19*, FOX WEST TEXAS (Apr. 23, 2020), https://www.myfoxzone.com/article/news/health/coronavirus/man-arrested-for-harassment-of-public-servant-after-coughing-on-sapd-officer-claiming-to-have-covid-19/504-b1fcd4b0-9446-44f3-9107-4d1b8555ae15.
[175] *See* Criminal Complaint, *supra* note 157, at 2–8.

arrested, and, in the course of the arrest spat into the face of an officer, stating: "I have Corona [expletive], and I'm spreading it around."[176] The defendant refused to submit to testing for the virus, so the FBI obtained a federal search warrant for a nasal swab, which returned negative.[177] The defendant was charged under 18 U.S.C § 1038(a)(1) for perpetrating a biological weapons hoax.[178] Presumably, this was due to the negative test, but this aptly displayed that even in those cases where individuals are likely to fit under the statutory definition outlined in 175(a) or 175(b), prosecutors are hesitant to use it.

Notably, despite the ambiguity surrounding 175(a) and 175(b), the statute is likely sufficient to prosecute any of the historical examples discussed in the preceding pages.[179] The Indians' use of poison arrows would fall under 175(a) for acquisition, stockpiling, and possession. The U.S.'s transfer of smallpox-infected blankets to Indians would fall under the transfer, possession, and retention prongs of 175(a). Germany and Japan's respective wartime usages fall under almost every prong of both 175(a) and 175(b). The strength of 175 is derived from its unconstrained nature and vague terms, which provide limited guidance as to what it concerns and to whom it applies. This vagueness, however, also serves as the statute's chief weakness, as exemplified by the above-mentioned limited uses and hesitation.

The primary issue with the statute in question arises from overinclusion, a desire to mirror the *United Nations Convention on Biological Weapons* too closely, and a decision to include too much within its scope when other remedies were available. Francis Boyle, the chief author of 175, was an international law professor and advisory board member at Amnesty International.[180] Boyle presumably drafted 175 to mirror the U.N. Convention on Biological Weapons as closely as possible. But Professor Boyle overlooked one

[176] *Id.* at 6, 8.
[177] *See id.* at 8.
[178] *See id.* at 1, 9.
[179] *See* 18 U.S.C. § 175.
[180] *See Francis Boyle*, UNIVERSITY OF ILLINOIS COLLEGE OF LAW, https://law.illinois.edu/faculty-research/faculty-profiles/francis-boyle/ (last visited Mar. 16, 2024).

key facet: that international and domestic law are predicated upon different understandings of the social contract.

The U.N. Convention was never meant to be enforceable. The Convention merely sought to establish "a strong norm against biological weapons."[181] The drafters of the U.N. Convention never had to worry about whether it would be used to convict criminals and in what circumstances it would be prudent to use it, as the U.N. lacked any real authority over the signatories.[182] Countries had observed decades and centuries of history that outlined what was and was not permissible and when and where certain deviations were acceptable, so while the agreement officially codified the prohibited behavior, countries knew that the behavior observed in WWI and WWII was what the convention sought to prohibit.[183]

This is not the case for domestic law, which starts from no common understanding and binds all citizens alike. The language, to be enforceable, needs to be specific. The U.N. issues warnings; domestic law enforcement punishes crimes. When dealing with the U.S.'s national security, therefore, it is necessary to give clear notice to those that might run afoul of the law. Since it contains such unclear and ambiguous language, relying on a misguided analogy to an international compact, DOJ's hesitation to use or interpret 175 is understandable, and 175 cannot be fixed by adopting small linguistic changes. Instead, it requires a comprehensive overhaul.

IV. COMPREHENSIVE OVERHAUL

Many have argued that the general criminal and civil restrictions surrounding bioterrorism and biological agents should be overhauled.[184] That position is not novel. Professionals and experts have testified to Congress (at least since 1969) that additional criminal

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[181] *Biological Weapons Convention,* UNITED NATIONS OFFICE FOR DISARMAMENT AFFAIRS, https://www.un.org/disarmament/biological-weapons/ (last visited Mar. 16, 2024).

[182] *See id.*

[183] *See History of the Biological Weapons Convention*, UNITED NATIONS, https://www.un.org/disarmament/biological-weapons/about/history/ (last visited Mar. 16, 2024).

[184] *See* Heather Dagen, *Bioterrorism: Perfectly Legal*, 49 CATH. U. L. REV 535, 569 (2000).

and regulatory authority should be extended over biological agents.[185] Yet no one has provided a revised framework that can be adopted quickly or an immediately actionable solution. That is the goal of this section.

Though this solution focuses on revision to the criminal bioterrorism statute, it is also worth recognizing that the Food and Drug Administration ("FDA") has significant oversight of relevant civil issues, as does the U.S. Department of Agriculture, Centers for Disease Control and Prevention ("CDC") and the U.S. Department of Labor.[186] The regulatory regimes of these entities would require time and thought beyond the scope of this comment. Instead, this comment addresses the statute at issue and offers limited revision that, of course, could be usurped by a broader regulatory or statutory regime.

To achieve form, this comment focuses on selective subdivision of 175(a). As previously noted, the statute is overbroad and attempts to encompass too much conduct in a single section. 175(a) should be revised as follows:

> Whoever knowingly develops, produces, stockpiles, transfers, acquires, retains, or possesses in an unreasonable quantity any category of biological agent or toxin with the intent to disseminate such to a foreign power, or agent of a foreign power, for use as a weapon shall be fined under this title and punished by death or imprison for life.

This proposed language covers much less material than the existing 175(a) but removes much of the ambiguity. This proposal is intended to cover only those who seek to transfer a biological agent to

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[185] *See id.* at 571.

[186] *See generally Organisms and Vectors Guidance & Permitting*, ANIMAL & PLANT HEALTH INSPECTION SERV., U.S. DEPT. OF AGRIC. (Jul. 24, 2023), https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-and-animal-product-import-information/organisms-vectors/ct_organisms_and_vectors; *Foodborne Pathogens*, U.S. FOOD & DRUG ADMIN. (May 3, 2023), https://www.fda.gov/food/outbreaks-foodborne-illness/foodborne-pathogens; *About the Federal Select Agent Program*, CTRS. FOR DISEASE CONTROL & PREVENTION (Oct. 2, 2023), https://www.cdc.gov/orr/dsat/about-fsap.htm; *Worker protections against occupational exposure to infectious diseases*, OCCUPATIONAL SAFETY & HEALTH ADMIN., https://www.osha.gov/bloodborne-pathogens/worker-protections (last visited Mar. 1, 2024).

a foreign power. This section, for all intents and purposes, criminalizes espionage targeting biological agents and complements 18 U.S.C. 794, which cover the transfer of defense information to a foreign government and assures parity in sentencing between the two. To achieve this, the modifier "or" is reduced from its previous nine usages to two; the words "any category" are added before biological agents to comport with the subsequent sections; and the ambiguity in the potential penalty is removed, with a blanket term of life being standard and unwavering. Since this creates an extreme penalty for any violations of the statute, the statute should be invoked rarely if ever. Toward this end, the limiting language makes the burden of proof high enough to dissuade erroneous prosecution.

The next change, to 175(b), would be to replace it entirely and to add related Sections 175(c) and 175(d). They are combined here for the sake of brevity using a parenthetical to display the scaling system. The intent of the original 175(b) will appear in a later revision to adhere to the original Congressional edict. Proposed 175(b)-(d) would impose sanctions proportionate to the risks posed by various classes of biological agents and would read as follows:

> Whoever knowingly develops, produces, stockpiles, transfers, acquires, retains, or possesses in an unreasonable quantity a Category [A, B, C] Biological Agent, or conspires, attempts, or threatens to do, without proper disclosure and permission, shall be fined under this title and sentenced to prison for a term no longer than [30, 20, 10] years.

The largest change is the integration of a classification system that tacitly reduces ambiguity by referring to an external control that is far more operable than the current definition and permits input from subject-matter experts.

In 1999, the CDC created a classification system for biological agents likely to be used in bioterrorism.[187] Their system was loosely modeled off the existing European Union ("EU"), World Health Organization ("WHO"), and Chinese laboratory biosafety categories, which provided a rating for biological agents regardless of their

[187] *See* Deqiao Tian & Tao Zheng, *Comparison and Analysis of Biological Agent Category Lists Based On Biosafety and Biodefense*, PLoS ONE (2014), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4076228/.

usage.[188] The CDC's categories are based on transmissibility, mortality rate, the potential for social disruption, and general preparedness to respond adequately.[189]

Category A biological agents are the most extreme, with a high transmissibility and mortality rate, and a large potential for social disruption.[190] These agents pose a substantial threat to national security and they requires a coordinated and informed response.[191] This category includes many of the agents used successfully in biological attacks, including anthrax, the plague, tularemia, viral hemorrhagic fevers, such as Ebola, and arenaviruses, such as Lassa and Machupo.[192] Category B includes less infectious diseases and viruses, including brucellosis, salmonella, glanders, ricin, typhus, and cholera.[193] These are moderately easy to disseminate and have moderate to low morbidity rates.[194] Unlike the preceding two categories, Category C does not include specifically enumerated biological agents but includes "any emerging pathogen that could be engineered for mass spread in the future," which serves as a blanket catch-all for any emerging pathogens that the CDC has not yet classified otherwise.[195]

The CDC's classification system varies in format, but not in function, from those in Europe and Asia, with the purpose of identifying biological agents with the potential for widespread disruption and damage.[196] The CDC classification seeks to increase domestic preparedness for first responders, medical professionals, and health departments.[197] It has not yet been used, nor was it developed, for prosecutorial purposes, but the categorical distinction is useful as an objective tool for defining and measuring the severity of various agents. An individual who commits the offense using a Category A

[188] *See id.* at 3.
[189] *See Bioterrorism Agents/Diseases (by category)*, CTRS. FOR DISEASE CONTROL & PREVENTION (Apr. 4, 2018), https://emergency.cdc.gov/agent/agentlist-category.asp.
[190] *See id.*
[191] *See id.*
[192] *See id.*
[193] *See id.*
[194] *See id.*
[195] *See Bioterrorism Agents/Diseases (by category), supra* note 189.
[196] *See* Deqiao Tian & Tao Zheng, *supra* note 187, at 5.
[197] *See Bioterrorism Agents/Diseases (by category), supra* note 189, at 1.

biological agent would be subject to a 30-year term of imprisonment, while those committing such with Category B and C would be subject to 20 and 10 years respectively.

The next change is the addition of 175(e), which is not a penal statute but rather a federal affirmative defense. This may be best placed elsewhere as a matter of procedure, but given it bears directly on the preceding section, it is included here. 175(e) states the following:

> It is an affirmative defense to prosecution under 175(B)(C)(D) that, at the time of the commission of the acts constituting the offense, the defendant was engaged in prophylactic, protective, bona fide research, or other peaceful purpose directly endorsed by the United States.

This borrows directly from the existing language in 175(b), which dictates that the defendant cannot be charged when engaged in research or pursuing other peaceful purposes.[198] This is to protect the economic, medical, and scientific interests of the U.S., which remain widespread. Those engaged in medical and scientific research should not be charged under this revised statute, assuming the conduct arises out of their profession. This is not to say, however, that medical professionals or researcher could never be charged. This affirmative defense likely would not, for example, have applied to Dr. Bruce Ivins, who worked after hours, merely because he was engaged in research during the day.[199] Although Dr. Ivins would have been free to assert such, it would be a question for the jury as to whether this was the case at the time of the activity. To remove some of the ambiguity surrounding what counts as a bona fide, prophylactic, or peaceful purpose, the proposed language includes the requirement that the conduct is directly endorsed by the U.S.

The Soviet Union, Germany, and Japan went to great lengths to legitimize their respective programs, drafting official documents, conferring titles, and requiring reports to governing bodies. Yet this did nothing to prevent the threat of biological weapons and in fact amplified the threat in many instances.[200] Accordingly, the language

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[198] *See* 18 U.S.C. § 175(b).

[199] *See AMERITHRAX INVESTIGATIVE SUMMARY*, *supra* note 1, at 29–32.

[200] *See generally* JING-BAO NIE, *supra* note 89, at 24–27.

that there must be a prophylactic, protective, bona fide purpose always begged questions about who's standard it was to be measured against. The Japanese believed that their tests were protective,[201] as did the Soviets, whose original purpose for development was prophylactic.[202] Without this provision, unscrupulous actors could seek immunity asserting that they believed themselves to be engaged in bona fide research.[203] The tie to the United States helps to ensure that neither at-home scientists nor clandestine research facilities abroad can successfully invoke this defense.

The final revision to the statute comes in the form of 175(f), which is an entirely new section modeled loosely on the language and purpose of the existing 175(b).[204] The proposed 175(f) aims to address advances in medicine and science that have expanded access to biological agents and related processes. To be clear, expanded access is good and leads to helpful innovation and progression, but it comes with the risk that unscrupulous actors might place profit over people, cut corners, and in so doing jeopardize the safety and security of the U.S. There is no shortage of medical and science startups who have failed in spectacular fashion in the past, and while we have thus far avoided issues with the potential release of biological agents, if we play with fire long enough, we will surely get burned.[205] This addendum seeks to get ahead of that. The proposed language for 175(f) is as follows:

> Whoever negligently develops, produces, stockpiles, transfers, acquires, retains, fails to reasonably secure, exercise adequate oversight over, possesses in an unreasonable quantity, or fails to timely inform the U.S. Government as to the loss of continuous possession of any category of biological agent shall be sentenced to prison for a term no longer than seven years.

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[201] Grace Danqing Yang, *Cognitive Dissonance, Social Psychology, and Unit 731,* UNIVERSITY WRITING PROGRAM: BRANDEIS UNIV. (2022), https://www.brandeis.edu/writing-program/write-now/2022-2023/yang-grace/yang-grace.pdf (last accessed Mar. 21, 2024).

[202] *See* RIMMINGTON, *supra* note 77.

[203] *See* RIMMINGTON, *supra* note 77.

[204] *See* 18 U.S.C. § 175(b).

[205] *See* Rachel Lerman, *Theranos failed, but other blood-tech companies are still trying to make testing faster and easier*, WASH. POST, (Nov. 16, 2021), https://www.washingtonpost.com/technology/2021/11/16/blood-startups-theranos/.

In this proposal, the scienter "knowingly" has been replaced with "negligently." "Fails to reasonably secure," "exercise adequate oversights over," and "fails to timely inform" have been added to the list of predicates; and the category has been shifted to any. This addition aims to address unintentional bioterrorism — incidents that result from medical or scientific negligence, where an actor who may have permission to possess the substance lacks the intent to transfer it but is the proximate cause for a third party acquiring it.

I am coining the proposed changes to 175 as the "Stevens Fix," named after journalist Roberts Stevens, whose family won a civil negligence lawsuit against the U.S. Army years after his death.[206] If this statutory framework, as proposed, existed at the time of Robert Stevens's death, it would have allowed the government to pursue the researchers who failed to provide adequate storage and oversight of the material, those who knew of Dr. Ivins's inappropriate comments regarding the substances, and others who acted negligently.[207] It also provides future relief for medical and science startups who negligently endanger public safety and well-being in the pursuit of profit rather than war. Finally, it disincentivizes any prosecutorial malfeasance within the above sections. The lower mens rea makes it easier to pursue violations of the proposed statute, but with the tradeoff of a lighter maximum custodial sentence. It provides needed flexibility to allow for prosecution, while not being so broad that it allows prosecutors to contort cases to fall within its bounds.

V. MORE UNNECESSARY LAWS

Critics of these proposed revisions are likely to take issue with the additional criminalization of conduct, noting that there are numerous other statutes under which this conduct could reasonably fall. They are equally likely to argue that the revision is unnecessary given the flexibility in sentencing under the current regime as well as the fact that this conduct seldom if ever occurs. This is all correct, but misses the point of the above revisions, which is providing clarity to the law. Nonetheless, I will address both critiques, with Section A explaining why indictment under other statutes is inappropriate and

[206] *See* Shane, *supra* note 22.
[207] *See AMERITHRAX INVESTIGATIVE SUMMARY, supra* note 1, at 29.

dangerous, and Section B explaining why the United States Sentencing Guidelines are not an adequate remedy.

A. *Prosecuting Under Other Federal Crimes*

In the post-9/11 world there is no shortage of terrorism and terrorism-related statutes in the federal code.[208] Examples include providing material support or resources to a designated foreign terrorist organization, 18 U.S.C § 2339B air piracy, 49 U.S.C. § 46502; and various offenses around the possession, use, and transfer missile systems designed to destroy aircraft, 18 U.S.C. § 2332g. In short, many criminal statutes cover terroristic behaviors.[209] Based on this, it is reasonable to believe that if one was to commit an act of bioterrorism, one could not do so without running afoul of other prohibitions. Indeed, in addition to those referenced above, many criminal prohibitions, such as wire fraud, 18 U.S.C § 1343; or affecting interstate commerce via threats or violence, 18 U.S.C § 1951, cut broadly, and could apply to a significant subset of bioterrorism cases.[210] For example, Dr. Bruce Ivins, the suspect in the Amerithrax Attacks likely could have been charged with multiple counts of mailing threatening communications under (18 U.S.C§ 876) or interference with commerce by threats or violence (18 U.S.C. § 1951) not to mention state counts of attempted murder and murder.[211]

Thus, in the Amerithrax case, federal prosecutors likely could have stacked several charges to reach a life sentence even if bioterrorism charges were not an option. However, contentment with such a solution ignores a core purpose of the criminal justice system, which seeks to provide for accurate charging with clear notice of criminality, not stacking of lesser, broad crimes to account for statutory inadequacy. Furthermore, there are pragmatic reasons that this approach is less than desirable. This increases the time and costs associated with prosecution and increases the likeliness of a successful appeal.

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[208] *See*, *e.g.*, PETER G. BERRIS, CONG. RSCH. SERV., R46829, DOMESTIC TERRORISM: OVERVIEW OF FEDERAL CRIMINAL LAW AND CONSTITUTIONAL ISSUES (2021).
[209] *See* 18 U.S.C. § 2339B; *see also* 49 U.S.C. § 46502; 18 U.S.C. § 2332g.
[210] *See* 18 U.S.C. § 1343; 18 U.S.C. § 1951.
[211] *See AMERITHRAX INVESTIGATIVE SUMMARY, supra* note 1, at 56–58.

In some cases, prosecutors may not have to stack anything to get a conviction for bioterrorism, as they could simply use 18 U.S.C § 2332a, Use of a Weapon of Mass Destruction, which includes "any weapon involving a biological agent."[212] Prosecutors have successfully obtained convictions under, 18 U.S.C § 2332a for similar behavior, such as when an individual mailed a powder that, while not anthrax, was represented as such causing alarm and eliciting a sizeable response from emergency services.[213] This, however, is a generally untested strategy, and one should not assume that this approach would provide any lasting remedy or continue to survive appeal, given the unique facts of the *Davila* case.

B. *Sentencing Flexibility*

Prudent observers also note that numerous sentencing enhancements exist for the use or threat of biological weapons independent of the base crime.[214] For example, air piracy and more general terrorism charges, such as providing material support, can receive a supplement of levels for the use, threat, or procurement of biological weapons under the sentencing guidelines.[215] But in practice, this does not serve as a viable solution for addressing the varying precursors and only serves to increase the punishment for unrelated conduct. If one commits air piracy and bioterrorism, prosecutors can reasonably charge both and seek the respective sentencing enhancements. Those circumstance provide ample opportunity for remedy; at issue are the closer cases. The focus here is solely on bioterrorism and those engaged only in such conduct. Therefore, relying on sentencing enhancements of unrelated crimes is not a long-term solution, and only incentivizes erroneous charging.

Furthermore, observers may argue that the flexibility of 175 in sentencing makes subdivision as proposed unnecessary. Proponents of the current system argue that the sentencing guidelines coupled with a carefully crafted indictment allow prosecutors to craft the charge so that the punishment can range based on the conduct at issue

[212] 18 U.S.C § 2332(a).
[213] *See* U.S. v. Davila, 461 F.3d 298, 299, 309 (2d Cir. 2006).
[214] *See, e.g.,* U.S. SENT'G GUIDELINES MANUAL § 2M6.1 (U.S. SENT'G COMM'N 2021).
[215] *See id.*

and whether it is charged under 175(a) or 175(b) and the specific facts which bear directly on the sentencing level.[216] This, however, hinges national security upon a complex mathematical calculus that provides little certainty, a calculus that, in some cases, results in an erroneously high sentence and, in others, a dangerously low sentence.

Similarly, the statute is not as flexible as it may appear on its face, and the versatile aspects of it are still subject to constructive constraints. 175(a) comes with a base offense level of 42, if there is an intent to injure the U.S., which, even under a criminal offense category of one, is thirty years to life.[217] If there is no intent to injure the U.S., the range is 3.5 to 4.5 years.[218] Alternatively, 175(b) comes with a base offense level of 20, which results in a range of 33 to 87 months, depending on a criminal history category.[219] Many view this broad discretion as a positive because it allows judges to view the facts of the crime and provide a sentence based on the circumstances surrounding the crime.[220] There is limited data to support this assertion, variances occurred in 33 percent of national defense cases, and overall, 66.7 percent of national security defense cases fell below the recommended sentence.[221] The most common reason for variance, however, was discretionary variance, not at the government's request, which occurred in 27.8 percent of cases.[222] This variance creates uncertainty for prosecutors and the public as this can significantly alter sentence lengths resulting in a longer or shorter than expected sentence.

The best example of this is the discrepancy between Cheng Le and Jeff Levenderis. Levenderis, despite being convicted on four charges including 175(a), was sentenced to only six years.[223] At trial, it was found that Levandris had hundreds of lethal doses and an elaborate suicide plan that would have killed his stepfather,

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[216] *See id.*
[217] *See id.*
[218] *See id.*
[219] *See id.*
[220] Jerold H. Israel, *Sentencing, the Dilemma of Discretion*, *in* INTRODUCTION TO THE CRIMINAL JUSTICE SYSTEM 13–14 (Hazel B. Kerper Ed., 2d ed. 1979).
[221] *Interactive Data Analyzer*, U.S. SENT'G COMM'N (2023), https://ida.ussc.gov/analytics/saw.dll?Dashboard.
[222] *Id.*
[223] *See* U.S. Att'y's Off. N. Dist. Of Ohio, *supra* note 146.

endangered first responders, and destroyed his stepfather's house, endangering neighbors.[224] By contrast, Cheng Le, who ordered ricin off the dark web with the intent to poison only a single person, was sentenced to 16 years.[225] Both took their cases to trial and owned the same substance with nefarious intent, yet there is a grave disparity between their sentences.[226] Sentencing cannot be used as a solution. Judges rarely see these types of cases, so crafting a fair and appropriate sentence based on the current statute and the individual facts proves challenging.

CONCLUSION

Bioterrorism is a persistent and real threat to the U.S., and the current statutory framework to address bioterrorism is insufficient. The existing statute is written in a way that is confusing for even the most advanced lawyers, which causes hesitation to use it, even when a case may meet the enumerated components. This comment explored these shortcomings, highlighting how the DOJ is uncertain in interpreting the statute and, as a result, displays how cases involving bioterrorism were not pursued under 175. In response, this comment advocated for stylistic and substantive modifications to the statute to increase clarity, and to provide certainty in sentencing. Efforts should be undertaken to charge crimes under the appropriate statute and fixing statutory ambiguity to make 175 operable instead of opting to prosecute under broader statutes. Failure to make these changes endangers our national security. This issue demands accuracy, fairness, and justice — something that the current statute does little to promote. Robert Stevens's death cannot be in vain, and we cannot rely on patchwork interpretations of 175 to protect us. 175 needs to change before the next bioterror attack to add clarity to the statute and to adequately protect American citizens, like Robert Stevens, and to avoid protracted litigation over these issues.

[224] *See id.*
[225] *See* U.S. Att'y's Off. S. Dist. of N.Y., *supra* note 149.
[226] *See id.*; *see also* U.S. Att'y's Off. N. Dist. Of Ohio, *supra* note 146.

APPENDIX 1 – MODEL REVISED 18 U.S.C § 175

(a) Whoever knowingly develops, produces, stockpiles, transfers, acquires, retains, or possesses in an unreasonable quantity any category of biological agent or toxin with the intent to disseminate such to a foreign power, or agent of a foreign power, for use as a weapon shall be fined under this title and sentenced to prison for a term of life.

(b) Whoever knowingly develops, produces, stockpiles, transfers, acquires, retains, or possesses in an unreasonable quantity a Category A Biological Agent, or conspires, attempts, or threatens to do, without proper disclosure and permission, shall be fined under this title and sentenced to prison for a term no longer than 30 years.

(c) Whoever knowingly develops, produces, stockpiles, transfers, acquires, retains, or possesses in an unreasonable quantity a Category B Biological Agent, or conspires, attempts, or threatens to do, without proper disclosure and permission, shall be fined under this title and sentenced to prison for a term no longer than 20 years.

(d) Whoever knowingly develops, produces, stockpiles, transfers, acquires, retains, or possesses in an unreasonable quantity a Category C Biological Agent, or conspires, attempts, or threatens to do, without proper disclosure and permission, shall be fined under this title and sentenced to prison for a term no longer than 10 years.

(e) It is an affirmative defense to prosecution of 175(b)-(d) that, at the time of the commission of the acts constituting the offense, the defendant was engaged in prophylactic, protective, bona fide research, or other peaceful purpose sanctioned or regulated in some manner by the United States or World Health Organization.

(f) Whoever negligently develops, produces, stockpiles, transfers, acquires, retains, fails to reasonably secure, fails to

> exercise adequate oversight over, possesses in an unreasonable quantity, or fails to timely inform the U.S. Government as to loss of continuous possession of any category of biological agent shall be sentenced to prison for a term no longer than seven years.