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2 **Advancing Environmental Health and Justice: A Call for Assessment and Oversight of Health**
3 **Care Waste**

4
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7

8 **Abstract**

9 Health care waste adversely affects society in ways that have been overlooked for decades, an issue that
10 the COVID-19 pandemic has accelerated significantly. This policy statement addresses the human
11 impacts that occur as health care waste is processed, transported, landfilled, or incinerated. With limited
12 federal tracking and lack of regulation, patterns of environmental racism persist. Communities of color
13 and low-income communities most often experience the greatest environmental health burdens through
14 disposal of waste in their communities. Many communities have called for action for decades, as our
15 massive health care industry contributes greatly to these harms. Centering these communities, public
16 health professionals must advocate for (1) evidence-based federal policies with transparent, accessible
17 data about health care waste generation, type, and fate; (2) leadership within the health care industry (e.g.,
18 from hospitals, accrediting bodies, and professional organizations) to address environmental health and
19 justice issues related to waste; (3) health impact assessments, cost-benefit analyses, and circular economy
20 research with health care systems and communities to identify cost-effective, feasible, and just solutions;
21 and (4) federal initiatives to prioritize funding toward mitigation of cumulative exposures and impacts,
22 reparation for harms, and investment in well-being for communities exposed to waste, health care or
23 otherwise. Some public health experts anticipate that we may be entering a “pandemic age,” which
24 suggests that, without intervention, intersecting issues of infectious disease, climate change, waste, and
25 environmental health and justice will remain and reoccur.
26

27 **Relationship to Existing APHA Policy Statements**

- 28 • APHA Policy Statement 202116: Ensuring Equity in Transportation and Land Use Decisions to
29 Promote Health and Well-Being in Metropolitan Areas
- 30 • APHA Policy Statement 20218: Call for Urgent Actions to Address Health Inequities in the U.S.
31 Coronavirus Disease 2019 Pandemic and Response
- 32 • APHA Policy Statement 20197: Addressing Environmental Justice to Achieve Health Equity
- 33 • APHA Policy Statement 20189: Achieving Health Equity in the United States

- 1 • APHA Policy Statement 201711: Public Health Opportunities to Address the Health Effects of
2 Air Pollution
- 3 • APHA Policy Statement 20158: Preventing Occupational Transmission of Globally Emerging
4 Infectious Disease Threats
- 5 • APHA Policy Statement 20078: Addressing the Urgent Threat of Global Climate Change to
6 Public Health and the Environment
- 7 • APHA Policy Statement 200412: Support for Community-Based Participatory Research in Public
8 Health
9

10 Problem Statement

11 Health care waste refers to all waste related to medical procedures, including waste generated within health
12 care facilities, laboratories, research centers, homes, communities, veterinary health care settings, and other
13 minor sources.[1] This may entail waste from health care–related food systems; medical waste plastics
14 (MWP); pharmaceutical, chemical, radiological, or infectious agents; personal protective equipment
15 (PPE); and human or animal tissues and remains, among other types. The United States health care
16 industry generates an estimated 5 to 6 million tons of waste each year,[2] with 5 billion pounds (or about
17 half) attributable to the nation’s nearly 6,100 private and public hospitals.[3,4] Beginning in 2020, the
18 COVID-19 pandemic accelerated the production of most types of health care waste globally as a result of
19 increased demands on the system from testing, vaccination, and treatment, as well as increases in single-
20 use MWPs because of early concerns regarding SARS-CoV-2 transmission and infection.[5]

21
22 One type of health care waste, regulated medical waste (RMW), is not defined by federal U.S. policy but
23 is generally considered “the portion of the waste stream that may be contaminated by blood, body fluids
24 or other potentially infectious materials, thus posing a significant risk of transmitting infection.”[6] This
25 includes microbiological laboratory waste, pathological and anatomical waste, blood specimens and
26 products, and other body-fluid specimens, as well as vaccine sharps and vials. Approximately 75% to
27 90% of health care waste is nonhazardous, while 10% to 25% is infectious, toxic, or radioactive and
28 considered RMW in the United States.[1,7] In the United States, RMW is typically autoclaved (i.e.,
29 sterilized with steam) (20%–37%) or incinerated (49%–60%), or sometimes other technologies are used
30 to process it (4%–5%).[3] Large health care facilities treat much of their RMW on-site, but most rely on
31 other companies to take it off-site.[3] By the end of 2021, RMW had increased at unprecedented rates
32 with more than 8 billion SARS-CoV-2 vaccine doses given globally, resulting in an additional 144,000
33 tons of RMW from glass vials, syringes, needles, and safety boxes.[5] We must not lose sight of the

1 humanity underlying RMW, which includes bodily remains as well. At the onset of the pandemic in 2020,
2 with an overwhelming number of lives lost to SARS-CoV-2, management of RMW entailed disaster
3 morgues and mass graves in the United States and across the planet.[8,9]

4
5 Health care waste poses many threats to public health, including from excessive production and disposal of
6 petroleum-based single-use MWPs, unsustainable waste management practices that contribute to climate
7 change (e.g., failure to adequately segregate RMW from nonhazardous waste), and inequities associated
8 with transport and siting of health care waste that disproportionately harm communities of color and low-
9 income communities, both urban and rural, that are situated near waste streams. Of course, the exposure
10 scenarios and environmental risk factors for these related issues vary greatly, and multiple and coordinated
11 policy solutions are needed to improve oversight toward health equity. To begin, this policy statement
12 focuses on common types of health care waste, including single-use MWPs and RMW from U.S. hospital
13 settings, that contribute to notable health inequities downstream. (Note that health care waste generated in
14 households is beyond the scope of this policy statement.)

15 Health care waste management standards, regulations, and guidance: In the United States, a variety of
16 agencies have responsibilities for health care waste management, as follows.

- 17 • The Environmental Protection Agency (EPA) oversees waste management through the Resource
18 Conservation and Recovery Act (RCRA), which provides a legal framework for management of
19 both hazardous and nonhazardous solid waste, and much of the general health care waste stream
20 makes its way to RCRA-managed waste facilities.[10]
- 21 • The Occupational Safety and Health Administration (OSHA) and the Centers for Disease
22 Control and Prevention (CDC) provide rules and guidance for discarding RMW, and facilities
23 that generate this type of waste are required to have a medical waste management plan to prevent
24 infection.[11–13] OSHA has additional responsibilities over workplace safety for those
25 managing waste.[11] The CDC is responsible for infectious disease management of
26 waste.[12,13] The Department of Transportation, the Department of Veterans Affairs, the
27 Department of Agriculture, the Federal Emergency Management Agency, and other agencies
28 have their own regulations or guidelines that point to CDC and OSHA rules.
- 29 • Also, with the CDC, OSHA, the Department of Agriculture, and the Federal Emergency
30 Management Agency, the Department of Transportation enforces hazardous materials
31 regulations with requirements for transport of RMW, as workers and communities may be at risk
32 if problems occur in transit. Motivated by cases of Ebola in the United States in 2014 and 2015,
33 the Department of Transportation developed stronger protections for “Class A” materials, which

1 are defined as those “known or reasonably expected to contain a pathogen that is in a form
2 capable of causing permanent disability or life-threatening or fatal disease in otherwise healthy
3 humans or animals who are exposed to it.”[14,15]

4 These and many other federal protections are in place, and they are primarily designed to reduce
5 transmission of infection through worker protection.

6
7 Ultimately, there are no federal regulations for tracking health care waste, making it difficult to identify
8 which and how much communities are disproportionately burdened with any associated environmental
9 exposures. The Medical Waste Tracking Act (MWTa) of 1988 followed the RCRA’s “cradle-to-grave”
10 approach to waste regulation wherein the EPA specifically tracked RMW from generation to disposal.[16]
11 Motivated by several incidents of health care waste washing ashore in waterways and oceans in the late
12 1980s, it mandated enforceable standards (i.e., standards with penalties) for separating, packing, storing,
13 and labeling RMW with recordkeeping of the amounts and types generated. However, the MWTa was
14 implemented in only a handful of states and expired after 2 years.[17]

15
16 In 1990, Congress commissioned a report by the Government Accountability Office (GAO) to assess “(1)
17 selected states’ infectious medical waste regulatory programs; and (2) the status of the [EPA’s]
18 implementation of the Medical Waste Tracking Act.”[18] The report yielded six recommendations
19 for the EPA to reconsider various health waste management practices; five of the six
20 recommendations were considered “closed and not implemented,” and it was stated that the “EPA
21 does not anticipate having a regulatory role in medical waste management,”[18] without any indication of
22 which agencies should have this responsibility.

23
24 The EPA did address one of the 1990 GAO recommendations by developing the Clean Air Act’s Hospital
25 Medical Infectious Waste Incinerator Standards.[16] The EPA considers impacts on communities where
26 health care waste is incinerated by regulating emissions through these standards. More than 90% of U.S.
27 health care waste was incinerated prior to 1997 and the implementation of these standards,[16] a process
28 that may contribute to ambient air pollution as a major source of dioxins, furans, and particulate
29 matter.[7]

30
31 Most states have developed laws pertaining to RMW (some patterned after the MWTa), and these laws
32 vary in their stringency, definition of RMW, and requirements. For example, some states require
33 registration for medical waste generators, but most do not. Some states set time frames for how long

1 RMW can be stored before disposal, and others do not. A federal repository of state laws does not exist,
2 but the Healthcare Environmental Resource Center does have a map endorsed by the EPA that links to
3 each state’s RMW policies (although some are outdated).[19] Similarly, many health care waste industry
4 Web sites (e.g., PureWay, SharpsCompliance Inc.) have links to each state’s related policies to support
5 hospital administrators who use their services to maintain compliance within and across states. The Model
6 Guidelines for State Medical Waste Management, commissioned and funded by the EPA and prepared by
7 the Council of State Governments, can be found on the EPA Web site,[20] but these guidelines were
8 published in 1990 and thus do not reflect current trends in science, policy, or technology.

9
10 Relatedly, there is no limit on transporting health care waste from a state with more stringent regulations
11 to one with more lax regulations,[21] which may lead some states and municipalities to take on more
12 waste in exchange for economic revenue. Historically, this has generally meant that a large portion of
13 waste is placed in communities that are already overburdened with incinerators, landfills, or other
14 cumulative environmental risks, where cheaper land and fewer regulations perpetuate disproportionate
15 impacts.[22–25] U.S. environmental protections, including the Clean Air Act’s Hospital Medical
16 Infectious Waste Incinerator Standards, have long failed to account for these cumulative impacts.[26]

17
18 Producing and managing single-use and medical waste plastics: The health care industry generates large
19 amounts of MWP, and many medical equipment (e.g., tubing, blood sample tubes), and PPE (e.g., gloves,
20 N95 masks, plastic face shields, Class II surgical gowns) items are designed to be disposable.[27–31] In
21 addition to generation of more single-use PPE and municipal solid waste (MSW) during the COVID-19
22 pandemic, disposable nonprescription “over-the-counter” antibody and diagnostic tests have become a
23 part of life for millions and may be increasingly available during future infectious disease outbreaks.[32]
24 Although these single-use and MWP items help sustain life, are often mandated, and protect the health
25 care workforce from contracting infections such as SARS-CoV-2, they can also harm human life with
26 major environmental health and justice implications. To begin, industry manufacturers at the front end,
27 and incinerators and landfills on the back end, carry the burden of related pollution emissions and
28 discharges, unsafe noise, and harmful odors that reduce quality of life in significant ways. Also, with the
29 ongoing increases in single-use plastics and MWPs, manufactured using fossil fuels, there are more
30 carbon dioxide and methane emissions, leading to further climate disruption.

31
32 Some single-use plastics and MWPs are RMW, but many are not. In the late 2000s and early 2010s,
33 several studies began to outline related issues of inadequate waste segregation. The authors of one

1 systematic review reported that up to 90% of “red bag waste” (i.e., RMW) was not hazardous or
2 infectious.[33] Other researchers reported that 40% of operating room waste was simply nonhazardous
3 packing material and that up to 60% of operating room waste was recyclable.[34] According to
4 Healthcare without Harm, these activities are responsible for producing about one third of waste in health
5 care settings with operating rooms in the United States, , and two thirds of that waste is considered
6 RMW.[35] In 2019, a survey across four Mayo Clinic campuses revealed that 57% of the 524
7 participating operating room staff members and clinicians were unclear on which items were
8 recyclable.[34] In fact, studies suggest that as much as 80% of waste is uncontaminated and accumulated
9 prior to a patient entering the operating room and could be directed toward nonhazardous waste or
10 recycling streams.[36,37] However, the World Health Organization reports that 3 of 10 health care
11 facilities globally do not have the infrastructure to segregate waste.[5] Furthermore, during the COVID-
12 19 pandemic, many health care facilities considered all health care waste infectious and deemed it RMW
13 even though much was not—as we have since learned the primary transmission route is airborne rather
14 than dermal.[38]

15
16 Assessing health care waste streams and public health impacts as a matter of environmental racism: For
17 generations, environmental racism has underlain the general management and siting of waste in the United
18 States and the shipping of waste to lower-income nations.[22–25,39] In 1979, a group of Black
19 homeowners in Houston, Texas, formed the Northeast Community Action Group and used legal tactics to
20 cease the placement of a sanitary landfill in their neighborhood. Although their lawsuit, *Bean v.*
21 *Southwestern Waste Management, Inc.*, failed to stop development of the landfill, it raised awareness about
22 the potential health effects of waste management and siting. In 1982, protests further galvanized the
23 environmental justice movement when residents of Warren County, North Carolina, fought back against
24 the dumping of 60,000 tons of soil contaminated with polychlorinated biphenyls in their community. The
25 United Church of Christ led a historic analysis in 1987, with a follow-up conducted in 2007.[22,23] These
26 reports confirmed that race predicted hazardous waste siting in the United States above and beyond one’s
27 income. As of 2019, there were 73 municipal solid waste incinerators in the United States, and 79% of
28 them were located in low-income communities or communities of color.[39] In Michigan, for example, six
29 of the state’s eight hazardous waste facilities are located in Wayne County, a majority-Black county in one
30 of the most segregated regions in the nation, with nearly 70% of this waste coming from outside the
31 state.[40]

32

1 Much health care waste from U.S. hospital and clinical settings is moved off-site and, thus, contributes to
2 exposures and impacts among those living near incinerators and landfills in both urban and rural
3 communities. Rather than health equity, waste facility siting and expansion decisions have often been
4 determined by the availability of affordable land, which then perpetuates co-location of environmental
5 exposures through a system of environmental racism.[22,25] A systematic review of studies published
6 between 2002 and 2017 on the health impacts of waste incineration identified 61 papers reporting on
7 adverse outcomes.[41] This included 34 papers reporting exposure to elevated levels of known pollutants,
8 with nine papers for each of the following outcomes: increased risk of developing neoplasia, correlation
9 with adverse reproductive outcomes, and links to hypertension, reduced lung function, and other
10 diseases.[41] Another systematic review led to close examination of 29 studies assessing health effects
11 associated with proximity to landfills, incinerators, and dump sites/open burning sites.[42] The authors of
12 the review found that residing near landfills was associated with increased risks of mortality, respiratory
13 diseases, and negative mental health effects and that living near any type of MSW site was associated
14 with an increased risk of adverse birth and neonatal outcomes. However, there has not always been
15 extensive evidence, and major gaps in the scientific literature remain. Data on RMW and overall health
16 care waste amounts, types, and fate could help us to better understand and address the health care
17 industry's contributions to environmental injustice.

18

19 The role of medical and public health professionals is relevant in addressing health care waste as an issue
20 of health equity. Increasingly, medical and other health professional programs are integrating climate
21 change into curricula, and some are beginning to acknowledge waste as a contributor.[43] The
22 Association for Medical Education in Europe, the American Medical Association, the Australian Medical
23 Association, and the World Medical Association have all called on medical professionals to recognize
24 their role in addressing the climate crisis.[44] Yet, few appear to explicitly recognize climate or
25 environmental justice implications of our health care systems in policy and position statements. The U.S.
26 Call to Action on Climate, Health, and Equity: A Policy Action Agenda, with signatories including
27 APHA, the Academic Pediatric Association, Physicians for Social Responsibility, and the American
28 Medical Student Association, as well as nearly 100 other health-affiliated organizations, does draw
29 particular attention to environmental justice.[45] Additional attention to health care waste will further
30 help to achieve these goals. The environmental standards of The Joint Commission, the accrediting body
31 for health care organizations, focus on ensuring safe handling of RMW with no attention to where that
32 waste eventually goes.[46] These standards have substantial reach as they apply to approximately 78% of

1 U.S. hospitals.[47] Ultimately, medical communities have not fully recognized the need for assessment
2 and oversight of health care waste to achieve health equity.

3 4 Evidence-Based Strategies to Address the Problem

5 Ongoing improvements to procurement and waste management in hospitals and other large clinical
6 settings could help to reduce production of petroleum-based single-use MWPs and alleviate harmful
7 downstream incineration and landfill practices that disproportionately affect low-income communities and
8 communities of color in the United States. Leading organizations such as Healthcare without Harm and
9 Practice Greenhealth have long advocated for reductions with frameworks such as “rethink, reduce, reuse,
10 recycle, dispose,”[35] and specific evidence-based strategies continue to emerge that make it possible to
11 move away from “dispose” and toward “rethink” and “reduce.” For example, the Ronald Reagan UCLA
12 Medical Center piloted a switch from single-use to reusable surgical gowns, which are ultimately thicker,
13 offer more protection against infectious disease transmission, and diverted 297 tons of waste from
14 landfills between 2011 and 2015.[48] Today, reusable surgical gowns are increasingly used in health care
15 settings but are still not commonplace.[48] The World Health Organization’s 2022 report “Global
16 Analysis of Healthcare Waste in the Context of COVID-19” spells out the following strategies for
17 reducing PPE-related waste that hospitals are piloting across the world: compostable face masks,
18 recycling of surgical masks, and repurposing of used medical masks as construction materials.[5] Also,
19 several autoclaving techniques allow hospitals to treat RMW on-site, avoiding community transmission
20 during handling, enabling it to be handled as MSW rather than RMW, and reducing overall waste
21 weight.[49] Of course, many waste reduction approaches are already routine in health care settings, such
22 as small color-coded and labeled medical waste containers to avoid mixing of waste types.

23
24 Many large hospitals have sustainability coordinators, committees, offices, or senior leadership focused
25 on environmental programming, or they hold memberships with organizations providing technical
26 assistance, communities of practice, and inspiration, such as Practice Greenhealth.[50] This work may or
27 may not emphasize waste issues. Some major health care systems are leading the way by addressing
28 waste through increased sustainability, carbon neutrality, or Leadership in Energy and Environmental
29 Design certification planning processes, entailing large-scale organizational shifts. Kaiser Permanente has
30 a history of leadership focused on environmental stewardship, and it has launched various recycling and
31 environmental procurement programs to meet the goal of carbon neutrality set in 2016.[51] As part of this
32 plan, the organization set a goal of recycling, reusing, or composting 100% of its nonhazardous and

1 nonmedical waste by 2025. In 2020, Kaiser Permanente reported collecting 400 tons of medical devices
2 for reprocessing and more than 45,900 tons of waste for recycling, reuse, or composting.

3
4 Furthermore, there are economic incentives that may support the health care industry toward improved
5 waste reduction. More than a decade ago, the Commonwealth Fund studied hospital programs that
6 centered energy conservation and waste reduction and estimated that, if expanded to all U.S. hospitals, the
7 programs could save the health care system \$15 billion over 10 years.[52] Practice Greenhealth conducted
8 a survey of 331 hospitals and found that initiatives to reduce waste in operating room facilities saved
9 them \$100,000, on average, and nearly \$72.4 million overall in 2019.[53] Representing nearly 20% of the
10 U.S. gross domestic product, the health care industry has purchasing power to shift industry practices, and
11 environmentally preferable purchasing programs have long been effective in decreasing costs while
12 reducing waste.[54] The Healthcare Environmental Resource Center informs hospitals that if RMW is
13 more than 15% of their total waste, there is likely much room for cost savings given that hospitals may
14 pay up to 10 times the cost to process RMW relative to their solid waste.[55] Additional cost-benefit
15 analyses, circular economy studies (i.e., how to design for durability, reuse, remanufacturing, and
16 recycling), and health impact assessments may help to inform administrative and financial decision
17 making at varying scales.

18
19 Even with increasing options for sustainable practices, massive amounts of health care waste will remain
20 a global reality and a likely threat to environmental health and justice given historic patterns. To truly
21 address downstream environmental impacts of health care, some governments recognize the need to track
22 and report environmental metrics by health care systems, sometimes including waste-related metrics. In a
23 cohort study of 49 large U.S. health care organizations, Senay and Landrigan found that the health care
24 delivery sector has long lagged in sustainability reporting relative to other U.S. sectors.[56] In addition,
25 Hensher and McGain note that while some U.S. health care organizations are leading in environmental
26 stewardship (e.g., Kaiser Permanente), most fall short in moving beyond basic corporate social
27 responsibility and climate risk disclosure reporting.[57] Hensher and McGain direct readers to a potential
28 model: the England National Health System’s Sustainable Health Dashboard. This dashboard “provides
29 performance data for every NHS provider, clinical commissioning group, and region in England on a
30 range of indicators in the domains of governance; carbon; resources, water, and waste; air pollution;
31 plastics; and adaptation.”[58] Although less comprehensive than the National Health System, many other
32 countries or provincial and state governments also make efforts to generate the data needed to make
33 evidence-based health care waste management decisions. For instance, in Victoria, Australia, state

1 government funding policy mandates that all public health services report specific environmental impact
2 measures annually, including energy use, greenhouse gas emissions, water use, and waste generation.[59]

3
4 Although the U.S. health care system is radically different than the systems in most other nations, similar
5 federal reporting policies could be designed, and they could also be an opportunity to consider and
6 develop strategies to alleviate environmental injustice impacts. For instance, we saw the Affordable Care
7 Act call on nonprofit, tax-exempt hospitals to begin assessing and addressing social determinants of
8 health in the communities they serve through required community health needs assessments
9 (CHNAs).[60] Some scholars have seen CHNAs as a missed opportunity for addressing environmental
10 issues and preparing for climate change. CHNAs may not currently be the appropriate mechanism for
11 assessing health care waste impacts, as they are designed to focus on the community defined by
12 geographic area and target populations served.[60] If health care waste is sent across state lines, for
13 instance, this would be beyond a CHNA's required scope, but requirements could be extended to account
14 for this issue. Of course, many federal policies exist whereby, with EPA oversight, states are charged with
15 managing industry regulation, data collection, and enforcement to uphold the Clean Air Act, Clean Water
16 Act, and RCRA, for instance. Although these policies have failed in many ways to address environmental
17 injustice, new policies are under consideration that may be relevant, such as Justice40, designed to ensure
18 that "40 percent of the overall benefits of certain Federal investments flow to disadvantaged communities
19 that are marginalized, underserved, and overburdened by pollution." [61] Through these policies, large
20 amounts of data are made publicly available via databases such as EJScreen and the Climate and
21 Economic Justice Screening Tool. In the United States, we have evidence that policies and tracking tools
22 are possible and could be helpful in documenting and addressing health care waste in efforts to curb
23 environmental injustice.

24 25 Opposing Arguments/Evidence

26 Admittedly, many of these evidence-based solutions for waste reduction have tradeoffs. For instance, in
27 efforts to reduce RMW, health care facilities must balance the benefits and costs of using large amounts
28 of chemical disinfectants that may have environmental health implications.[62] Many strategies must be
29 approved by leadership or accrediting bodies as cost-effective, and they may raise liability issues when
30 shifting from single use toward reuse of materials such as PPE.[63] Recycling, rather than disposal, may
31 still have major implications for global environmental health and justice associated with its transport,
32 processing, and siting given that U.S. waste is often transferred to other countries.[64] As Wyssusek
33 explains, "until recently a significant portion of the world's recycled plastic, paper and scrap metal have

1 been exported to China. Up to 70% of the world’s plastic waste alone was exported to China and Hong
2 Kong in 2016.[65] However, recently China has put a ban on such waste imports causing a global panic
3 around where else to divert the increasing volumes of recyclable waste, raising the question of
4 sustainability of recycling after all.”[66] Sustainability efforts toward environmental justice cannot be
5 abandoned, however; research that considers the health impacts of these decisions holistically, alongside
6 costs and benefits, is needed to inform programs and policies.

7
8 Given that health care in the United States is largely private, and thus profit oriented, many industry leaders
9 may argue that the costs of shifting toward environmentally just practices are too high. Small health care
10 systems, especially those serving rural communities and providing care to uninsured populations, may not
11 be able to implement major environmental changes because of cost or lack of expertise. Increased costs for
12 meeting new recycling, segregation, or handling requirements or shifting to new purchasing models may
13 lead health care providers to shift added costs to patients. Evidence suggests that this does not need to be
14 the case. Decreasing RMW through improved segregation can mean fewer processing costs and air
15 emissions.[49] Many cost-saving programs do exist, and they illustrate that it may not be necessary to
16 increase the already high costs of health care for patients.[49]

17
18 Opponents may also suggest that data on the disproportionate adverse health impacts of health care waste
19 on communities of color and low-income communities are inconclusive as there is not a national system to
20 track the transport and disposal (landfill or incineration) of health care waste, specifically RMW. Of the 73
21 MSW incinerators operating in the United States, 79% are located in communities of color and low-income
22 communities, and more than half (44 and 48, respectively) are located in communities where the
23 population is at least 25% people of color and 25% of the population is living below the federal poverty
24 line.[39] For decades, countless studies have shown similar inequitable siting patterns for landfills and
25 hazardous waste sites, suggesting that these patterns have held steady or worsened.[21–25] Also, we know
26 that communities surrounding landfills and incinerators experience adverse health effects.[41,42] Federal
27 policy has never truly confronted the environmental racism embedded in waste management—health care
28 or otherwise.

30 Action Steps

31 Because health care waste in the United States is a matter of environmental health and justice, a
32 coordinated policy effort is needed. As noted, public health experts anticipate that we may be entering a
33 “pandemic age,”[67] and thus intersecting issues of infectious disease, health care waste management,

1 and climate change require assessment and policy intervention. APHA offers the following
2 recommendations:

- 3 1. Federal lawmakers must increase oversight of health care waste given that current state-by-state
4 policies likely perpetuate environmental justice issues. To begin, Congress should hold hearings and
5 call for a GAO report to outline challenges and opportunities for environmental protections with
6 respect to health care waste, including a much-needed comparative, evaluative scan of existing state-
7 by-state policies.
- 8 2. On the basis of lessons learned from other federal policies and state management of health care waste,
9 Congress should establish new policies after completing the GAO report. This could entail, for
10 instance, an updated version of the Medical Waste Tracking Act of 1988, an amendment to the RCRA,
11 and/or new requirements within the Affordable Care Act's CHNA process to address health care waste.
12 Policy is needed to delineate federal definitions of RMW and call on the EPA to establish a tracking
13 system to easily understand who is transporting health care waste (RMW and MSW) within and across
14 state lines, U.S. territories, and tribal lands and out of the United States. The EPA should make health
15 care waste tracking data available in tools including EJScreen and the Climate and Economic Justice
16 Screening Tool. This would allow communities, agencies, and scholars to understand the social,
17 economic, and health implications of this waste and inform and compel strategies to address
18 disparities.
- 19 3. Federal or state lawmakers should establish policies that require health care systems to prioritize
20 environmental health and justice through adequate staffing, resources, training, and capacity for
21 sustainability initiatives that reduce health care waste and propose solutions from generation and
22 segregation to siting. Policies should also include protections for workers who handle health care
23 waste.
- 24 4. The EPA should revisit the Model Guidelines for State Medical Waste Management and generate
25 updated guidelines based on lessons from state policies and evidence of cost-effective sustainability
26 programs that have emerged over the past several decades with intentional consideration of the
27 environmental justice impacts of health care waste. Technical assistance or grant opportunities offered
28 by the agency could better help to continually identify and improve upon such models. In doing so, the
29 EPA should consult with diverse stakeholders within the health care and waste industry, state agencies,
30 and the environmental justice movement.
- 31 5. The Joint Commission should extend its environmental standards for site accreditation by requiring
32 waste audits to assess the type, amount, and fate of health care waste for each facility. Site

- 1 accreditation should also include review of protection measures in place for workers who handle health
2 care waste.
- 3 6. With increased integration of climate change–related curricula in medical and other health professional
4 training programs, as well as a move from leading health-related professional associations to call on
5 their members to act on climate change, instructors in clinical training programs must more explicitly
6 acknowledge local and global climate and environmental justice to increase awareness across the
7 health care workforce of waste issues in a deepened commitment to doing no harm.
- 8 7. Scholars should conduct health impact assessments, cost-benefit analyses, and circular economy
9 research with health care systems and communities to identify cost-effective, feasible solutions to
10 reducing use of single-use plastics and MWP and moving toward environmentally preferred
11 purchasing. These studies could assess environmental justice impacts related to different waste
12 management strategies (e.g., sterilization and reuse, on-site sterilization before landfilling,
13 incineration) or the potential economic and environmental health impacts of closing landfills or
14 incinerators. In addition, they could account for health care tradeoffs (e.g., infection risks, unintended
15 effects of recycling processes, elevated costs), as well as downstream impacts of health care waste, and
16 consider metrics relevant to fenceline communities in the United States and beyond.
- 17 8. Finally, reduction of health care waste and increased tracking alone will not fully eliminate the long-
18 standing burden of waste (health care and otherwise) in low-income communities and communities of
19 color in the United States. Federal initiatives designed to address environmental racism, such as
20 Justice40, must prioritize funding toward mitigation of cumulative exposures and impacts, reparation
21 for harms, and investment in amenities to support well-being in communities exposed to various waste
22 management practices.

23 References

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