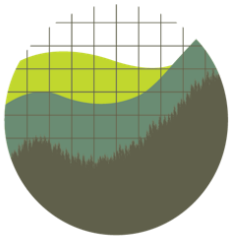

Institute *for*
Policy Integrity
NEW YORK UNIVERSITY SCHOOL OF LAW

July 13, 2022

To: Environmental Protection Agency

Re: Asbestos Part 1: Chrysotile Asbestos; Regulation of Certain Conditions of Use under Section 6(a) of the Toxic Substances Control Act (TSCA), 87 Fed. Reg. 21,706 (Apr. 12, 2022) (EPA–HQ–OPPT–2021–0057; FRL–8332–02–OCSPP)

The Institute for Policy Integrity at New York University School of Law ("Policy Integrity")[1] and Professor Rachel Rothschild respectfully submit the following comments to the Environmental Protection Agency ("EPA") regarding its proposal to prohibit importation, manufacturing, processing, distribution in commerce and commercial use of chrysotile asbestos ("Proposed Rule"). Policy Integrity is a non-partisan think tank dedicated to improving the quality of government decision-making through advocacy and scholarship in the fields of administrative law, economics, and public policy. Professor Rothschild joins these comments in her individual capacity. She is an Assistant Professor of Law at the University of Michigan Law School and an Affiliated Scholar at Policy Integrity.[2] Her scholarship has examined EPA's efforts to regulate toxic chemicals with a particular focus on the agency's prior attempt to ban asbestos in 1989.

EPA's Proposed Rule is well supported by extensive scientific evidence demonstrating the harmful effects of asbestos. Research on asbestos exposure has shown that it is "the largest single cause of occupational cancer in the United States and a significant cause of disease and disability from nonmalignant disease."[3] Despite declines in use, asbestos is still responsible for more than 40,000 deaths annually.[4] The chemical has become the poster child for EPA's struggles to regulate toxic chemicals, and the agency's failure to prohibit its use was a primary motivation for amending the Toxic Substances Control Act (TSCA) in 2016.[5]

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[1] This document does not purport to present New York University School of Law's views, if any.
[2] This document does not purport to present the University of Michigan Law School's views, if any.
[3] American Thoracic Society, *Diagnosis and Initial Management of Nonmalignant Diseases Related to Asbestos*, 170 AM. J. RESPIRATORY CRITICAL CARE MED. 691, 691 (2004).
[4] *See GBD Results Tool*, INST. HEALTH METRICS & EVALUATION, http://ghdx.healthdata.org/gbd-results-tool?params=gbd-api-2019-permalink/e42ad5d4422141c71c08eafd0e78dbf8 (last visited May 19, 2022) (compiling data on all asbestos deaths caused by occupational exposure for 2019 that led to mesothelioma, asbestosis, tracheal, and ovarian cancer).
[5] *See* H. Rep. NO. 114–76, at 28 (2015) ("To many members of the Committee, an important measure of TSCA reform proposals has been whether the proposal would enable EPA to take broader regulatory action to protect

Reflecting concerns about the use of cost-benefit analysis in EPA's 1989 asbestos ban, the 2016 Lautenberg Act changed the way EPA is to consider the costs and benefits of regulation for chemicals already on the market.[6] Under the revised statute, if EPA finds that a chemical poses an unreasonable risk to health and the environment, the agency must regulate the use of the substance in order to at least eliminate the unreasonable risk.[7] Here, EPA has determined that regulatory options short of a ban would not fulfill the agency's statutory obligation to ensure that chrysotile asbestos no longer poses an unreasonable risk. Accordingly, the agency appropriately proposes to prohibit these conditions of use.[8]

Yet while the Proposed Rule thus marks an important step forward in EPA's management of toxic chemical risks, the accompanying Regulatory Impact Analysis ("RIA") significantly understates the expected benefits of the rule. First, EPA makes several problematic assumptions when calculating the benefits of avoided cancer cases. These include that personal protective equipment ("PPE") will significantly reduce asbestos fiber inhalation in occupational settings and that a limited number of persons are at risk of exposure. EPA also ignores health benefits other than avoided lung cancer, mesothelioma, ovarian cancer and laryngeal cancer, further understating the expected benefits of the ban. Second, EPA adopts an inappropriately short timeline for examining the benefits of the Proposed Rule, concluding without adequate justification that the regulation will be obsolete after 20 years. Third, EPA's valuation of averted cancer risks does not reflect the latest economics literature on monetizing long-latency harms. Fourth, EPA understates the net benefits of the Proposed Rule by omitting significant co-benefits from its calculations. Fifth, EPA's assessment of the rule's costs adopts overly conservative assumptions about future revenue from caustic soda. More generally, the agency could provide greater clarity regarding its calculations, particularly when detailing how it valued the expected cancer risk reductions.

In light of the above concerns, Policy Integrity makes the following recommendations. These changes would be relatively straightforward to implement and should not delay finalization of the rule.

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against unreasonable risks from asbestos. The Committee expects this legislation to enable that regulatory action."); *see also Legislative Hearing on the Frank R. Lautenberg Chemical Safety for the 21st Century Act (S. 697), Hearing Before the S. Comm. on Env't and Pub. Works*, 114th Cong. 15 (2015) (statement from Sen. Udall) ("I think we all agree: TSCA is fatally flawed. It has failed to ban even asbestos.").

[6] *See* 162 CONG. REC. S3513 (daily ed. June 7, 2016) (statement of Sen. Udall) (explaining that while the old law required EPA to "consider the costs and benefits of regulation when studying the safety of chemicals," EPA must now "consider only the health and environmental impacts of a chemical. If they demonstrate a risk, EPA will have to regulate").

[7] *See* 15 U.S.C. § 2605(a) (stipulating that EPA must regulate chemicals found to pose an unreasonable risk "to the extent necessary so that the chemical substance or mixture no longer presents such risk").

[8] *See* EPA, Asbestos Part 1: Chrysotile Asbestos, 87 Fed. Reg. 21,706, 21,718 (2022).

- EPA should give a more detailed explanation of each step in its calculations, particularly regarding exposure durations and how these affect the expected increase in cancer risk.
- EPA overlooked a considerable number of health benefits from the rule. The agency should at least incorporate these effects into its analysis qualitatively if it cannot do so quantitatively.
- EPA *should not* assume that PPE protection reduces exposure under the ideal scenario of perfect use in its baseline benefits calculations. The agency also *should not* rely solely on industry data about PPE use and exposure scenarios. EPA should conduct a sensitivity analysis to determine how PPE use may influence the benefits analysis.
- EPA should reexamine the number of people at risk from the conditions of use addressed in the rulemaking, as the agency's current assumptions are unreasonably low.
- EPA should evaluate the rule over a longer timeframe to better capture the full benefits.
- EPA should place greater emphasis on the expected benefits as calculated under a 3% discount rate, as this rate is more consistent with current economics literature on appropriate discount rates for long latency harms.
- EPA should consider adjusting the expected value from avoided cancer harms upwards to reflect increases in GDP per capita that would occur over the latency period, as well as evidence that people place a premium on reducing their risk of cancer.
- EPA should either incorporate the rule's expected air pollution benefits into its discussion of "net" benefits or avoid using the term "net benefits" when comparing the health benefits from reduced cancer risks with the costs of the rule.
- EPA should rely more heavily on the anticipated net benefits under the caustic soda revenue gain scenario, as the revenue neutral scenario is unlikely to occur.
- EPA should consider conducting a breakeven analysis to ascertain the number of avoided fatalities necessary to equal the expected costs of the rule. This could allow the agency to better compare the costs and benefits of the rule through more realistic exposure scenarios and populations at risk. Policy Integrity has provided an example of this approach in Appendix A using expected fatalities under current Occupational Safety and Health Administration ("OSHA") limits for asbestos, which suggests that the rule is likely to break even solely from avoided cancer fatalities when inappropriate PPE assumptions are removed and more realistic estimates of exposed populations are used. While EPA need not conclude that the benefits break even to justify the Proposed Rule, it can reach this conclusion here based on available evidence and should make every effort to undertake this analysis.
- In future risk evaluations and risk management rules, EPA should not exclude exposure pathways simply because it might be possible to regulate them under other

federal laws. This approach risks overlooking regulatory options that could be net beneficial when considered holistically rather than in a piecemeal fashion. Appendix B provides an example of how a fragmented approach to assessing chemical risks can lead to under-regulation.

- Going forward, EPA should not bifurcate its analyses for a single chemical into separate proceedings for "legacy" and ongoing uses. Doing so wastes agency resources and could lead EPA to underestimate the cumulative benefits of regulation.

I. EPA Significantly Underestimates the Health Benefits of the Proposed Rule from Reduced Incidence of Cancer and Respiratory Illness

As EPA stated in its 2020 risk evaluation for chrysotile asbestos, numerous scientific studies have demonstrated a causal connection between asbestos and the development of cancer as well as lung illnesses.[9] It was therefore appropriate for the agency to evaluate the reduced risk of lung cancer, mesothelioma, ovarian cancer, and laryngeal cancer among exposed workers and occupational non-users when assessing the benefits of the Proposed Rule.[10] However, the narrow scope of EPA's assessment at numerous stages of the RIA severely undercounts the health benefits from avoided cancer cases and respiratory ailments. EPA underestimates occupational risks by assuming low exposure scenarios from PPE use that do not reflect actual workplace conditions and ignores benefits from reduced exposure outside a few occupational settings. It also omits benefits from avoided non-cancer health effects like asbestosis as well as cancers other than those listed above that are also associated with asbestos use. In addition, EPA's assumption that the conditions of use included in the Proposed Rule will eventually stop ignores the value of a ban for preventing prior uses from recurring.

EPA should revise the RIA to incorporate these benefits in its calculations, as currently the agency does not factor them into their analysis at all. If it is not possible to quantify and monetize them, at a minimum EPA should discuss their importance qualitatively. Including these benefits would not only provide additional support for the agency's proposed regulatory option. There is a considerable body of caselaw directing agencies to consider unquantifiable benefits

[9] *See* EPA, RISK EVALUATION FOR ASBESTOS PART I: CHRYSOTILE ASBESTOS 147–48 (Dec. 2020), https://www.epa.gov/sites/production/files/2020-12/documents/1_risk_evaluation_for_asbestos_part_1_chrysotile_asbestos.pdf (hereinafter "RISK EVALUATION FOR ASBESTOS").

[10] *See* EPA, ECONOMIC ANALYSIS OF THE TSCA SECTION 6 PROPOSED RULE FOR ASBESTOS RISK MANAGEMENT, PART 1 4-3 (2022) (hereinafter "ECONOMIC ANALYSIS OF THE PROPOSED RULE").

that are reasonably foreseeable.[11] Agencies are expected to weigh unquantified effects against a regulation's monetized costs and benefits in accordance with their judgment and expertise.[12]

The need to consider unquantifiable benefits is also well-established by the 2016 Lautenberg Act's legislative history. When amending the law, Congressional representatives were deeply concerned about EPA's difficulty in quantifying and monetizing the health harms of toxic chemicals and asbestos in particular.[13] In *Corrosion Proof Fittings v. EPA*, the U.S. Court of Appeals for the Fifth Circuit vacated EPA's 1989 asbestos ban partly because the agency did not quantify many health benefits of the rule. The opinion suggested unquantifiable benefits could tip the scale towards a regulatory option in close cases but could not be used as a "trump card allowing EPA to justify any cost calculus, no matter how high."[14] This aspect of the opinion was pivotal in convincing Congress to provide EPA greater authority to weigh unquantified benefits against a regulation's costs in the 2016 amendments.[15]

If EPA is unable to quantify and monetize the benefits detailed below, the agency should at minimum include a table summarizing these expected health benefits of the rule, as it has done for numerous other recent rulemakings.[16] Otherwise, the RIA implies that the only benefits associated with the rule are the quantified and monetized effects on a subset of cancer risks from asbestos exposure.

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[11] *See, e.g.*, Public Citizen v. Fed. Motor Carrier Safety Admin., 374 F.3d 1209, 1219 (D.C. Cir. 2004) ("The mere fact that the magnitude of [an effect] is uncertain is no justification for disregarding the effect entirely."); Am. Trucking Ass'ns v. EPA, 175 F.3d 1027, 1052 (D.C. Circuit 1999) (rejecting the idea that EPA could ignore health effects that are "difficult, if not impossible, to quantify reliably").

[12] *See* Entergy Corp. v. Riverkeeper, Inc., 556 U.S. 208, 235 (2009) (Breyer, J., concurring in part and dissenting in part) (writing approvingly of EPA's ability to "describe environmental benefits in non-monetized terms and to evaluate both costs and benefits in accordance with its expert judgment and scientific knowledge").

[13] *See The TSCA Modernization Act of 2015, Hearing on H.R. 2576 Before the Subcomm. on Environment and the Economy of the H. Comm. on Energy and Commerce*, 114th Cong. 26 (2015) (hereinafter "*The TSCA Modernization Act of 2015 Hearing*").

[14] Corrosion Proof Fittings v. EPA, 947 F.2d 1201, 1219 (5th Cir. 1991) ("Unquantified benefits can, at times, permissibly tip the balance in close cases. They cannot, however, be used to effect a wholesale shift on the balance beam. Such a use makes a mockery of the requirements of TSCA that the EPA weigh the costs of its actions before it chooses the least burdensome alternative.").

[15] *See The TSCA Modernization Act of 2015 Hearing*, *supra* note 13, at 26 (describing the importance of improving the agency's discretion to consider non-quantifiable benefits in the final bill, and noting that "the risks that we are looking at are often not quantifiable but the costs almost always are, and what we got out of the Corrosion Proof case was a finding that the Agency had to numerically determine that those benefits literally numerically were larger than the costs, which creates—you end up with a cost-biased standard, which has been one of the problems that we have had. So being clear about whether the Congress is looking for a cost-benefit balancing or you want a standard that requires the consideration of costs, which may not sound like it is a lot different but actually in reality it is quite different, would be very useful").

[16] *See, e.g.*, EPA, REGULATORY IMPACT ANALYSIS OF THE CROSS-STATE AIR POLLUTION RULE (CSAPR) UPDATE FOR THE 2008 NATIONAL AMBIENT AIR QUALITY STANDARDS FOR GROUND-LEVEL OZONE ES-16–ES-17, tbl. ES-6 (2016), https://www3.epa.gov/ttn/ecas/docs/ria/transport_ria_final-csapr-update_2016-09.pdf (providing a list and description of numerous health benefits from the rule) (hereinafter "CSAPR RIA").

A. EPA's Assumptions About Reductions in Exposure from PPE Are Inconsistent with Evidence on PPE Use In Practice

In recognition of the fact that workers can be especially at risk of harm from toxic chemical exposures, Congress amended TSCA to include workers as one of several "vulnerable" populations that EPA must protect when managing unreasonable chemical risks.[17] EPA's risk evaluation for asbestos found that workers exposed to chrysotile asbestos faced unreasonable risks to their health even when using PPE.[18] As EPA is required to ensure that a chemical no longer presents unreasonable risk, the Proposed Rule appropriately declines to rely "only on the use of respirators to reduce exposures to workers."[19]

However, in its benefits calculations, EPA nevertheless assumes that PPE use will significantly reduce workplace exposures despite extensive evidence that these measures are highly ineffective. As EPA acknowledges, this assumption has a dramatic effect on the agency's baseline calculations of cancer risks and the resulting benefits of the rule, ranging from a 10 to 10,000-fold reduction in expected exposures.[20] For example, "the average chlor-alkali worker exposure after accounting for baseline PPE usage is 7% of what the exposure would be with no PPE usage."[21]

These assumptions ignore that workers are often not provided with adequate PPE or, if provided with proper PPE, may wear the equipment incorrectly, exposing them to much higher levels of asbestos. To achieve the protection EPA has assumed, a worker must have an employer who provides them with the right PPE, appropriate fit testing, appropriate training, and medical exams. In practice, achieving each of these elements is very rare.[22] National Institute for Occupational Safety and Health ("NIOSH") studies show that many employers do not provide the critical elements of these programs.[23] OSHA has similarly warned that respirator use for

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[17] 15 U.S.C. § 2605(b)(4)(A). TSCA defines a vulnerable population as "a group of individuals within the general population identified by the Administrator who, due to either greater susceptibility or greater exposure, may be at greater risk than the general population of adverse health effects from exposure to a chemical substance or mixture, such as infants, children, pregnant women, workers, or the elderly." *Id.* § 2602(12).

[18] This is in contrast to EPA's current approach not to assume PPE use when making chemical risk determinations. *See* EPA, EPA Announces Path Forward for TSCA Chemical Risk Evaluations (June 30, 2021), https://www.epa.gov/newsreleases/epa-announces-path-forward-tsca-chemical-risk-evaluations.

[19] EPA, Asbestos Part 1: Chrysotile Asbestos, 87 Fed. Reg. 21,706, 21,713 (2022).

[20] *See* ECONOMIC ANALYSIS OF THE PROPOSED RULE, *supra* note 10, at ES-5.

[21] *Id.* at 4-15.

[22] *See* OSHA, Occupational Exposure to Asbestos, 51 Fed. Reg. 22,612, 22,693 (June 20, 1986) (emphasis added) (finding "only a nominal possibility that respirators will be properly worn at all times") (hereinafter "Occupational Exposure to Asbestos 1986"); *see also* Christopher A. Janicak, *OSHA's Enforcement of Asbestos Standards in the Construction Industry*, 4 OPEN J. SAFETY SCI. & TECH. 157, 159 (2014) (finding thousands of violations of workplace standards for asbestos exposure in the construction industry from 2010 through 2012, with minimal penalties imposed).

[23] *See, e.g.*, NIOSH, RESPIRATOR USAGE IN PRIVATE SECTOR FIRMS, 2001 2 (Sept. 2003), https://www.cdc.gov/niosh/docs/respsurv/pdfs/respsurv2001.pdf (finding that, when employers do provide respirators, only 59% provided training to workers on respirator use, 34% had a written respiratory protection

asbestos protection is "the least reliable means of control."[24] Problems with "worker discomfort, skin irritation or heat stress, body movements, difficulties in communicating and vision limitations leave only a nominal possibility that respirators will be properly worn at all times."[25] As OSHA has noted, even short periods where respirators are not properly used dramatically affect the degree of protection to a worker relying on respiratory devices.[26] For these reasons, OSHA economic analyses generally do not assume any baseline respirator use when calculating the benefits of regulating exposure to toxic chemicals in the workplace.[27] And when such assumptions are included, OSHA has examined their impact on the benefits calculations using a sensitivity analysis rather than in the central assessment of a rule's costs and benefits.[28]

Furthermore, the chlor-alkali industry in particular has faced heavy fines in the past for violating appropriate worker protection protocols.[29] And as EPA notes in the RIA's discussion of environmental justice impacts, "[a]ll nine chlor-alkali facilities have had at least one formal enforcement action under a major environmental statute during the past five years."[30] Yet EPA's sole basis for assuming that PPE will lead to such significant reductions in exposure is industry representations to the agency.[31] EPA has no independent data suggesting that PPE use reduces exposures to these levels.

Given the extensive evidence that PPE use, in practice, does not lower exposure levels to nearly the amounts assumed in the RIA, EPA should assess the potential benefits of the rule

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program, 47% performed an assessment of the employees' medical fitness to wear respirators, and 24% included air sampling to determine respirator selection); NIOSH, HEALTH HAZARD REPORT, ELECTRODE CORPORATION 11–12 (1993) (finding that workers opening asbestos-containing bags for use in making diaphragms were provided improper PPE that do not provide adequate protection from asbestos fibers and are intended for use only with nuisance particulates" and at other times were not wearing PPE at all); NIOSH, HEALTH HAZARD REPORT, GRUNDY INDUSTRIES 5 (1986) (finding employees were given improper respirators that do not adequately protect workers from asbestos exposure); NIOSH, HEALTH HAZARD REPORT, FRICTION DIVISION PRODUCTS 9–10 (1984) (conducting an investigation into asbestos exposure at a New Jersey facility and finding that workers were not provided with proper PPE nor given appropriate instruction in its use).

[24] Occupational Exposure to Asbestos 1986, *supra* note 22, at 22,693.

[25] *Id.*

[26] *See id.*

[27] *See, e.g.*, OSHA, FINAL ECONOMIC ANALYSIS AND FINAL REGULATORY FLEXIBILITY ANALYSIS: SUPPORTING DOCUMENT FOR THE FINAL RULE FOR OCCUPATIONAL EXPOSURE TO RESPIRABLE CRYSTALLINE SILICA VII-1 (2016) (stating that "[t]he effects of baseline respirator use on risk are ignored" in the agency's benefits calculations). As the agency goes on to explain, it "does not have the data to quantify the effects of respirator use *because it is well known that in actual practice in work settings, respirators are not always as protective as the assigned protection factors would indicate*." *Id.* at VII-4 (emphasis added).

[28] *See, e.g.*, OSHA, FINAL ECONOMIC ANALYSIS AND FINAL REGULATORY FLEXIBILITY ANALYSIS: SUPPORTING DOCUMENT FOR THE FINAL RULE FOR OCCUPATIONAL EXPOSURE TO BERYLLIUM VII-85, tbl. VII-16 (conducting a sensitivity analysis that assumes approximately 10 percent of workers have their exposure reduced through PPE use).

[29] *See* W. Stadig, *Chlor-alkali Producers Evaluate Safer Alternatives to Asbestos*, 56 CHEM. PROCESSING 41 (1993).

[30] ECONOMIC ANALYSIS OF THE PROPOSED RULE, *supra* note 10, at ES-15.

[31] *See id.* at A-21 ("This analysis assumes that 50 percent of chlor-alkali workers wear APF 10 and 50 percent wear APF 25 respirators in the baseline. . . This assumption is based on information EPA received from industry that APF 10 and APF 25 respirators are used for specific tasks.").

without these assumptions. EPA could then conduct a sensitivity analysis assuming PPE use to demonstrate the range in potential benefits from a ban and how PPE may affect the overall assessment of net benefits. For instance, even if employers fully comply with the exposure levels currently set by OSHA, many workers will die from lung cancer, mesothelioma or gastrointestinal cancer.[32] Similarly, OSHA expects numerous workers will suffer from asbestosis even if industries stringently follow current exposure standards, yet the benefits of avoided asbestosis are not even included in EPA's analysis.[33]

B. EPA Underestimates the Total Population that Will Benefit from the Proposed Rule

The Proposed Rule prohibits the importation of chrysotile asbestos and its subsequent commercial use, including in the chlor-alkali industry, chemical production, and automotive repair market. However, these activities do not affect only the small number of workers, occupational non-users, and consumers EPA considers in the RIA.[34] The agency asserts that there are only 144 workers, 276 occupational non-users, and 400 consumers exposed annually to chrysotile asbestos.[35] These numbers are inconsistent with the expected number of exposed persons listed in the 2020 risk evaluation for asbestos and vastly underestimate the populations that will benefit from the Proposed Rule.

For example, in the 2020 risk evaluation, EPA estimated that approximately 15,929 consumers are exposed to asbestos through aftermarket automotive breaks, linings, and clutches.[36] Yet in the RIA, the agency reduces this number to 400 based on the assertions of many importing companies that their brakes do not contain asbestos, and were listed by mistake on U.S. customs and border protection system.[37] The agency has made no effort to independently verify the accuracy of this information, against the advice of EPA's Science Advisory Committee on Chemicals not to rely on voluntary industry reporting.[38] EPA's refusal to collect and verify information on asbestos in brake pads and other imported articles is inconsistent with

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[32] *See* OSHA, Occupational Exposure to Asbestos 1986, *supra* note 22, at 22,647 (implementing a .2f/cc 8-hour limit for occupational exposure to asbestos). *See also* OSHA, Occupational Exposure to Asbestos, 59 Fed. Reg. 40,964, 40,966 (Aug. 10, 1994) (implementing a .1f/cc 8-hour limit for occupational exposure to asbestos) (hereinafter "Occupational Exposure to Asbestos 1994").

[33] *See* OSHA, Occupational Exposure to Asbestos 1986, *supra* note 22, at 22,647.

[34] *See* ECONOMIC ANALYSIS OF THE PROPOSED RULE, *supra* note 10, at 4-6, tbl. 4-3.

[35] *See id.*

[36] *See* RISK EVALUATION FOR ASBESTOS, *supra* note 9, at 226, tbl. 4-56.

[37] EPA appears to derive this new number from a new calculation of the total asbestos brake replacements per year, which is given as 1800. *See* ECONOMIC ANALYSIS OF THE PROPOSED RULE, *supra* note 10, at 6-4.

[38] *See* TSCA SCIENCE ADVISORY COMMITTEE ON CHEMICALS, MEETING MINUTES AND FINAL REPORT, NO. 2020-6 (2020) at 66–67 (recommending that EPA "actively collect more data on imported products suspected of containing asbestos instead of relying exclusively on voluntary reporting").

TSCA's requirement that the agency "collect reasonably available information to inform and facilitate its regulatory obligations under TSCA."[39]

Similarly, EPA reduces the number of expected occupational non-users in the chlor-alkali industry from about 3,000 in the 2020 risk evaluation to just 100 in the Proposed Rule's RIA, with no explanation given for this reduction.[40] In addition, EPA decreases the expected number of occupational non-users exposed through oilfield break blocks from 66,108 to just 1 person because "it is unclear how widespread the continued use of asbestos brake blocks is in oilfield equipment."[41] These uncertainties may warrant a sensitivity analysis to estimate benefits depending on whether a larger or smaller number of persons are affected. They do not, however, justify EPA's decision to ignore likely scenarios where larger numbers of Americans are exposed from these conditions of use.

Furthermore, asbestos fibers can be released during importation and transportation to commercial facilities. The chlor-alkali industry's own guidelines for handling asbestos acknowledge that many parts of the asbestos lifecycle can lead to releases that are not considered in the RIA.[42] Raw asbestos must be transported from U.S. ports-of-entry to storage sites, taken to industrial facilities to produce diaphragm material for chlor-alkali plants, and disposed after use.[43] Exposures can occur at each stage in this process, and industrial hygiene reports suggest that such releases in an uncontrolled environment are likely to exceed OSHA occupational exposure limits.[44] In addition, EPA ignores "take-home" routes of exposure, which can place family members of asbestos workers at risk because of the transport of asbestos-contaminated clothing and other items from the workplace to their residence.[45] The health benefits from reducing these exposures are not included in the RIA and should, at a minimum, be discussed qualitatively if the agency does not have sufficient data to estimate the number of persons affected by these accidental releases.

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[39] Asbestos Disease Awareness Org. v. Wheeler, 508 F. Supp. 3d 707, 735 (N.D. Cal. 2020). *See also id.* at 726 ("More fundamentally, as noted above, EPA has not attempted to quantify the volume of asbestos-containing articles imported into the U.S. Indeed, after listing only eight known categories of use, EPA acknowledges in its Problem Formulation that 'the import volume of products containing asbestos is not known.'").

[40] *See* RISK EVALUATION FOR ASBESTOS, *supra* note 9, at 223 (finding that at 15 chlor-alkali plants there were "approximately 2,900 to 3,000 other employees who work at the same or adjoining plant" and could be exposed to asbestos); *compare with* ECONOMIC ANALYSIS OF THE PROPOSED RULE, *supra* note 10, at 4-4 ("The risk evaluation estimates 100 workers and 100 ONUs are exposed to asbestos in the chlor-alkali industry.").

[41] *Compare* RISK EVALUATION FOR ASBESTOS, *supra* note 9, at 223,*with* ECONOMIC ANALYSIS OF THE PROPOSED RULE, *supra* note 10, at ES-6.

[42] *See* THE CHLORINE INSTITUTE, PAMPHLET 137, GUIDELINES: ASBESTOS HANDLING FOR THE CHLORALKALI INDUSTRY 12–15 (2008).

[43] *See id.*

[44] *See* Barry Castleman, Continuing Public Asbestos Exposure in the United States, EPA-HQ-OPPT-2016-0736-0122 (2018), at 1–2.

[45] TSCA SCIENCE ADVISORY COMMITTEE ON CHEMICALS, PEER REVIEW OF EPA DRAFT RISK EVALUATION OF ASBESTOS 26 (2020).

C. EPA Ignored Benefits from Reducing Additional Health Harms that Result from Asbestos Exposure

EPA appropriately monetizes the expected health benefits from reduced incidences of lung cancer, mesothelioma, ovarian cancer and laryngeal cancer. However, as the World Health Organization and the American Public Health Association have noted, chrysotile asbestos exposure is also strongly associated with other cancers, including those of the pharynx, colorectum, and stomach.[46] The agency should assess the expected benefits from reductions in these diseases and, if it is unable to quantify and monetize those expected harms, it should at least provide a qualitative assessment of them.

Asbestos also causes respiratory illnesses, notably asbestosis, that can severely decrease quality of life and cause disability.[47] EPA and OSHA have had data on asbestosis rates among workers for decades,[48] and EPA acknowledged that asbestos exposure could cause the disease in its initial scope document for the risk evaluation.[49] Furthermore, EPA's scoping documents for evaluating harms from "legacy" uses of asbestos includes asbestosis as a known human health hazard.[50] It is thus unclear why the agency here has not sought to at least quantify the expected health improvements in respiratory diseases from the ban. While monetizing the benefits would be ideal, EPA should, at a minimum, qualitatively discuss them and their likely magnitude in the RIA.

D. EPA Does Not Acknowledge the Benefits from Codifying the Current Baseline of Asbestos Use in the Regulated Industries

Throughout the RIA, EPA assumes that asbestos importation, processing, and distribution will decline in the future.[51] For example, EPA states that the chlor-alkali industry will "transition from asbestos diaphragm cells to membrane cells at the same rate that they have been

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[46] *See* WORLD HEALTH ORGANIZATION, IARC MONOGRAPHS: ASBESTOS 256–58 (2018) https://monographs.iarc.who.int/wp-content/uploads/2018/06/mono100C-11.pdf (finding a clear relationship between asbestos exposure and these cancer types); American Public Health Association, Comments on Draft Risk Evaluation of Asbestos 5 (June 2, 2020), https://www.apha.org/-/media/files/pdf/advocacy/testimonyandcomments/200602_apha_epa_sacc_risk_eval_asbestos.ashx?la=en&hash=5472C2C0E8129D5B621058AC516F56420A8813EF.

[47] *See* American Public Health Association, Comments on Draft Risk Evaluation of Asbestos 5 (June 2, 2020), https://www.apha.org/-/media/files/pdf/advocacy/testimonyandcomments/200602_apha_epa_sacc_risk_eval_asbestos.ashx?la=en&hash=5472C2C0E8129D5B621058AC516F56420A8813EF.

[48] *See* Occupational Exposure to Asbestos 1986, *supra* note 22.

[49] *See* EPA, SCOPE OF THE RISK EVALUATION FOR ASBESTOS 10, 34 (June 2017), https://www.epa.gov/sites/default/files/2017-06/documents/asbestos_scope_06-22-17.pdf (noting that asbestos exposure can cause asbestosis and pledging to evaluate this hazard).

[50] *See* EPA, DRAFT SCOPE OF THE RISK EVALUATION FOR ASBESTOS PART 2: SUPPLEMENTAL EVALUATION INCLUDING LEGACY USES AND ASSOCIATED DISPOSALS OF ASBESTOS 46 (Dec. 2021) ("Broad human health hazard effects indicated in previous assessments include the development of cancers including mesothelioma and lung, ovarian, and laryngeal cancer and non-cancer effects, notably asbestosis.").

[51] *See* ECONOMIC ANALYSIS OF THE PROPOSED RULE, *supra* note 10, at 2-1.

transitioning away from diaphragm cells since 1986."[52] These projections ignore alternative scenarios where chrysotile asbestos use remains stable or even rises in the absence of a ban. The agency should assess the expected costs and benefits of a ban in these alternative scenarios rather than rely solely on a model that projects continued declines. In combination with extending the timeline over which EPA assesses the benefits of the rule, this would assist the agency in obtaining a more robust picture of how its assumptions influence the net benefits analysis.

Even if chrysotile asbestos use were to continue to decline in the absence of a ban, there is value in codifying a ban so that industry will have a further incentive to eliminate chrysotile asbestos. TSCA requires EPA to ensure that chemicals found to pose an unreasonable risk to health no longer do so. The Proposed Rule will ensure that EPA eliminates the unreasonable risk from asbestos exposure and does so much more quickly than would otherwise occur.[53] And EPA, along with other agencies, has previously codified current industry practices to avoid harms that would result from a change to the status quo.[54] Under TSCA, for example, EPA routinely issues significant new use regulations to ensure that certain prior uses do not occur, including for asbestos.[55] EPA has also relied on the value of codifying existing industry practice when promulgating regulations under other environmental statutes. For instance, EPA finalized a rule prohibiting oil and gas extractors from sending hydraulic fracking wastewater to municipal sewage treatment plants even though no facilities were currently engaging in this practice. As the agency explained, the rule served "as a backstop measure because onshore unconventional oil and gas extraction facilities have discharged to [municipal sewage treatment plants] in the past and because the potential remains that some facilities may consider discharging to [municipal sewage treatment plants] in the future."[56]

E. EPA Underestimates the Overall Benefits of the Rule by Excluding Exposure Pathways that Fall Under the Purview of Other Federal Laws

[52] *Id.* at 3-5.
[53] For instance, at current rates, it would take decades for the chlor-alkali industry to completely eliminate asbestos. *See id.* at 3-8, tbl. 3-5.
[54] *See* Texas Oil & Gas Ass'n v. EPA, 161 F.3d 923 (5th Cir. 1998) (upholding an EPA regulation implementing a zero discharge limit on coastal oil and gas facilities even though operators would not incur any costs because the standard reflected current industry best practices); *see also* 79 Fed. Reg. 33,864, 33,865 (June 13, 2014) (Coast Guard "codifying the established industry practice" of using two tugboats to guide double-hulled oil tankers through Prince William Sound); 59 Fed. Reg. 22,100, 22,100 (Apr. 28, 1994) (Federal Aviation Administration codifying standards for jacking and tying down airplanes that are "consistent with current industry practice"); 48 Fed. Reg. 52,692, 52,692 (Nov. 22, 1983) (Food and Drug Administration stating that "the final rule only formalizes existing industry-wide practices").
[55] *See, e.g.*, EPA, Asbestos; Significant New Use Rule, 83 Fed. Reg. 26,922 (June 11, 2018); *see also* EPA, Long-Chain Perfluoroalkyl Carboxylate and Perfluoroalkyl Sulfonate Chemical Substances, 85 Fed. Reg. 45,109 (July 27, 2020).
[56] EPA, Effluent Limitations Guidelines and Standards for the Oil and Gas Extraction Point Source Category, 81 Fed. Reg. 41,845 (June 28, 2016).

In its 2020 risk evaluation, EPA excluded numerous exposure pathways from the analysis because the agency either can or already does regulate asbestos through these other laws.[57] For example, EPA declined to examine risks from outdoor air exposures because asbestos is already designated as a hazardous air pollution and subject to regulation under the Clean Air Act.[58] Similarly, the agency excluded water pathways from the analysis, citing regulations under both the Clean Water Act and Safe Drinking Water Act.[59] Nor did EPA consider potential harm from asbestos disposal, even though EPA does not regulate the chemical under the Resource Conservation and Recovery Act.[60]

However, as detailed in Appendix B, these exclusions prevent EPA from evaluating whether there are additional benefits from the rule because of exposure reductions in other pathways. Whether EPA considers the resulting benefits to be a direct or indirect result of the rule, they should be included in the agency's analysis.[61] While the agency may be unable to quantitatively examine these benefits given limitations in the 2020 risk evaluation, it should provide an assessment of the qualitative benefits from reductions in these exposure pathways.

II. EPA Underestimates the Overall Benefits of the Rule by Evaluating its Effects over a 20-year Timeframe

In calculating the net benefits of the Proposed Rule, EPA considers the rule's effects over a period of only 20 years. The agency claims that a 20-year timeline is warranted because 1) this is the period during which industry would incur the costs of the rule, 2) this was approximately the same time period it used when setting mercury emission standards for chlor-alkali plants, and 3) newer technology could make asbestos use obsolete. However, as explained below, each of these assumptions is flawed and does not reflect best practices for evaluating regulations that are likely to have benefits far into the future.

First, EPA must consider not only when the costs of the rule would be incurred, but when the benefits will accrue. The chosen time period for the RIA should reflect the need to adequately capture these costs and benefits, not whether EPA has used a particular timeline before in a regulation for the chlor-alkali industry. As the agency acknowledges, longer time horizons of up to 50 years may be warranted for some cost-benefit analyses.[62] That is the case here. The costs of the Proposed Rule will be incurred over a short period of time, but benefits will continue to accumulate to workers and the public far into the future because they will no longer be exposed to asbestos from these conditions of use. Therefore, the shorter the timeline,

[57] *See* RISK EVALUATION FOR ASBESTOS, *supra* note 9, at 48–52.
[58] *See id.* at 51.
[59] *See id.* at 51–52.
[60] *See id.* at 52.
[61] *See* U.S. Sugar Corp. v. EPA, 830 F.3d 579, 625–26 (D.C. Cir. 2016) (finding agency's consideration of a regulatory "co-benefit" permissible when doing so was neither expressly precluded by the operative statute nor inconsistent with that statute's purpose).
[62] *See* ECONOMIC ANALYSIS OF THE PROPOSED RULE, *supra* note 10, at 3-2.

the more biased the analysis will be in favor of industry costs. For example, workers at chlor-alkali facilities will continue to experience reduced risks of cancer throughout their working lifetime because of an asbestos ban. While it may be impractical to evaluate benefits intergenerationally, EPA should at least select a timeline that reflects the benefits to this current generation of workers, occupational non-users, and the public.

While there are obviously practical limits in the amount of time EPA can and should examine, there is clear precedent for adopting a time period that stretches 50 to 100 years into the future. For example, in an EPA regulation of waste from coal-fired power plants, the agency adopted a 100-year timeframe for estimating the costs and benefits of the rule, as this would "support estimation of long-term benefits and costs" given that "many of the human health and environmental benefits. . . may extend at least 100 years or more into the future."[63] Similarly, for a Department of Labor regulation examining the benefits of reducing beryllium, a known carcinogen, the agency selected a 60-year analytical timeframe since this reflects "the typical time needed to recognize the full benefits of a rule with cancer-avoiding benefits."[64] Under the agency's economic guidance, EPA should conduct a sensitivity analysis to determine how much net benefits are affected by the time frame chosen.[65] Based on the findings from this exercise, EPA should consider extending the time period used in the RIA at least as long as a typical working lifetime of 45-50 years.[66]

In addition, EPA provides no support for the claim that asbestos will eventually become obsolete. Industries have been using asbestos for decades without this Proposed Rule in place, and a major user of asbestos, the Olin Corporation, has recently sought a permanent exemption from the rule to continue using asbestos.[67] This should further prompt EPA to reassess the benefits of the rule over a longer time period.

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[63] EPA, REGULATORY IMPACT ANALYSIS FOR EPA'S 2015 RCRA FINAL RULE REGULATING COAL COMBUSTION RESIDUAL (CCR) LANDFILLS AND SURFACE IMPOUNDMENTS AT COAL-FIRED ELECTRIC UTILITY POWER PLANTS 2-29, 3-1 (Dec. 2014) (using a 100-year period of analysis, and noting that "[l]atency periods for onset of . . . cancers can average 20 years after exposure").

[64] DEPT. OF LABOR, ECONOMIC ANALYSIS FOR OCCUPATIONAL EXPOSURE TO BERYLLIUM FINAL RULE V-2 (2016) (explaining that the 60-year analytical time frame used "reflects the typical time needed to recognize the full benefits of a rule with cancer-avoiding benefits (in this case, a 45-year working life, plus a 10-year latency period for cancer, plus 5 years of ongoing health effects after retirement) and reach steady-state values").

[65] *See* EPA, GUIDELINES FOR PREPARING ECONOMIC ANALYSES 6-6 (Dec. 2010) ("In no case should the time horizon be arbitrary, and the analysis should highlight the extent to which the sign of net benefits or the relative rankings of policy alternatives are sensitive to the choice of time horizon.").

[66] The use of a working lifetime in measuring harm from toxic chemicals has substantial precedent in OSHA regulations and risk assessments for asbestos. *See, e.g.*, Occupational Exposure to Asbestos 1986, *supra* note 22, at 22,646; Occupational Exposure to Asbestos 1994, *supra* note 32, at 40,966 (explaining that OSHA has always examined the "working lifetime risk of death" when assessing occupational hazards, which "has been consistently upheld by the courts").

[67] *See* Olin Corporation, TSCA's Impact on Chlorine, Presentation to the Office of Management and Budget, Meeting 2070-AK86 (Feb. 23, 2022), https://www.reginfo.gov/public/do/viewEO12866Meeting?viewRule=true&rin=2070-

III. EPA's Analysis Does Not Reflect Best Economic Practices in Evaluating Long-latency Health Effects

EPA's assessment of the present value for reducing future cancer risks uses the Office of Management and Budget ("OMB")'s default discount rates of 3% and 7%. However, considerable economic evidence indicates that EPA should rely on a 3% discount rate, rather than a 7% discount rate, because the rule's benefits are long latency harms. Even over the 20-year timeline currently used in the rule, the choice of discount rate greatly influences the expected benefits; should EPA extend this timeline as Policy Integrity suggests, the effects of the chosen discount rate will become even greater.[68]

OMB's Circular A-4 specifies that a 3% rate is more appropriate when the regulation primarily affects the public.[69] And since Circular A-4's publication in 2003, a large body of economics research has found that lower discount rates of 3% or below are better suited to assessing public policies over longer time horizons.[70] This includes benefits several decades in the future as well as those that may stretch across multiple generations.[71] In the current RIA, a 3% discount rate suggests that the proposed ban will provide tens of millions in additional health and environmental benefits.[72] The choice of a discount rate is likely to have a similar impact on future TSCA rulemakings given that many chemical harms, such as cancer, occur over long latency periods. We therefore encourage EPA when evaluating the rule's effects to place greater emphasis on the expected benefits under a 3% discount rate, as it better reflects current economics literature.

In addition, it is unclear from the RIA whether EPA has adjusted the value of avoided cancer harms for increases in GDP per capita.[73] EPA has performed these adjustments for certain rules that have long latency harms, such as cancer, and should do so here given the likely effect

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AK86&meetingId=119123&acronym=2070-EPA/OCSPP (requesting a "permanent exemption for the continued safe use of asbestos in chlorine manufacturing").

[68] *See* Jason Schwartz & Peter Howard, *Valuing the Future: Legal and Economic Considerations for Updating Discount Rates*, YALE J. REG. (forthcoming 2022), at 2 https://policyintegrity.org/files/publications/SSRN-id3959078.pdf.

[69] *See* OFF. OF MGMT. & BUDGET, CIRCULAR A-4: REGULATORY ANALYSIS 33 (2003), https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/circulars/A4/a-4.pdf (hereinafter "CIRCULAR A-4").

[70] *See, e.g.*, COUNCIL OF ECONOMIC ADVISERS, DISCOUNTING FOR PUBLIC POLICY: THEORY AND RECENT EVIDENCE ON THE MERITS OF UPDATING THE DISCOUNT RATE 2 (2017); Moritz A. Drupp et al., *Discounting Disentangled*, 10 AM. ECON. J. ECON. POL'Y 109, 118 (2018) (finding that experts on social discounting recommend, on average, a social discount rate of 2% when assessing the present value of benefits that accrue over long timeframes).

[71] *See, e.g.*, Qingran Li & William A. Pizer, *Use of the Consumption Discount Rate for Public Policy over the Distant Future*, 107 J. ENV'T ECON. MGMT. 1, 9 (2021) (finding that the range of appropriate discount rates narrows to around 3% when examining time horizons of 20 years or longer).

[72] *See, e.g.*, ECONOMIC ANALYSIS OF THE PROPOSED RULE, *supra* note 10, at 4-10 (estimating the expected climate benefits from the ban).

[73] *See* SCIENCE ADVISORY BOARD (SAB) ENVIRONMENTAL ECONOMICS ADVISORY COMMITTEE, REVIEW OF 'VALUING MORTALITY RISK REDUCTIONS FOR ENVIRONMENTAL POLICY: A WHITE PAPER' 2–3, 20–21 (2011), https://www.epa.gov/system/files/documents/2022-03/86189901_0.pdf.

on the benefits analysis.[74] Recent economics research has also suggested that people place a nearly 15 percent premium on avoiding of cancer harms, which would add upwards of $1 million to the current value of a statistical life (VSL).[75] The agency should thus consider incorporating these additional benefits from cancer risk reductions into its analysis.

IV. EPA's Discussion of the Proposed Rule's "Net" Benefits Ignores Significant Co-Benefits from Air Pollution Reductions

As detailed in the RIA, the proposed ban is expected to result in considerable environmental and human health benefits from improvements in air quality and reductions in greenhouse gas emissions. The chlor-alkali industry is one of the most energy intensive industrial operations in the U.S., and switching to membrane cells will result in decreased usage of fossil fuels and their resulting pollutants.[76] EPA's calculations demonstrate that just one year of these benefits would more than justify the costs of the rule.[77] Furthermore, many chlor-alkali facilities are located in areas of the U.S. with populations that are already disproportionately exposed to harmful pollution.[78] The rule will thus reduce environmental injustices in these communities from both toxic chemicals and air pollution.

EPA's analysis of these co-benefits is well-supported by established administrative practices and economic guidance on the importance of considering the "actual results of regulatory requirements" regardless of whether they are direct or indirect effects.[79] Circular A-4 explicitly requires agencies to consider indirect benefits, specifying that agencies should include any "favorable impact . . . secondary to the statutory purpose of the rulemaking."[80] EPA's own cost-benefit guidelines likewise instruct the agency to assess "all identifiable costs and benefits," including direct effects "as well as ancillary [indirect] benefits and costs."[81] These guidelines

[74] *See, e.g.*, EPA, ARSENIC IN DRINKING WATER RULE ECONOMIC ANALYSIS 5-27 (Dec. 2000), https://nepis.epa.gov/Exe/ZyPDF.cgi/20001YQT.PDF?Dockey=20001YQT.PDF (explaining that EPA made adjustments to "VSLs accruing in future years. . . in the primary analysis to reflect anticipated income growth" between exposure and cancer fatalities, based on recommendations from the agency's science advisory board).
[75] *See* W. Kip Viscusi, Joel Huber & Jason Bell, *Assessing Whether There Is a Cancer Premium for the Value of a Statistical Life*, 23 HEALTH ECON. 384, 385 (2014) (finding a 14% premium for avoiding cancer risks, likely because "eliminating a risk removes the anxiety, worry, and dread that may be associated with a nonzero probability of an adverse outcome" and because "[r]educing a risk to zero also eliminates that risk category as something that a person needs to think about in terms of possible hazards").
[76] *See* ECONOMIC ANALYSIS OF THE PROPOSED RULE, *supra* note 10, at 4-24.
[77] *See id.* at 6-32.
[78] *See id.* at 6-2.
[79] Exec. Order No. 13,563 § 1, 76 Fed. Reg. 3821, 3821 (Jan. 21, 2011) (affirming Exec. Order No. 12,866); Exec. Order No. 12,866 § 6(a)(3)(C), 58 Fed. Reg. 51,735, 51,741 (Oct. 4, 1993) (detailing the requirements for cost-benefit analysis).
[80] CIRCULAR A-4, *supra* note 69, at 26.
[81] EPA, GUIDELINES FOR PREPARING ECONOMIC ANALYSES 11-2 (2020).

make clear that EPA's regulatory decision-making should be informed by both the direct and indirect effects of a rule.[82]

But although EPA adhered to this precedent and guidance by analyzing co-benefits from air pollution reductions, the RIA does not incorporate those co-benefits into its assessment of "net" benefits.[83] This is incorrect and should be fixed in the revised RIA.[84] The term "net" benefits, as traditionally used in economics literature, is meant to encompass the total costs and benefits of the ban, including indirect costs and benefits.[85] Legal precedents also support treating indirect effects equivalently to direct benefits in agency decision-making.[86] To do otherwise would "inconsistently and opportunistically frame[]" a rule's advantages and disadvantages.[87]

The agency's use of "net" only when discussing the quantified and monetized benefits from cancer risk reductions also conflicts with past EPA practices in conducting regulatory impact analyses. As a point of comparison, the agency recently completed a cost-benefit analysis for a cross-state air pollution regulation of ground-level ozone that had co-benefits from reductions in particulate matter and greenhouse gases.[88] In presenting the expected health and environmental benefits of the rule, EPA examined the combined benefits from all these expected improvements in air quality and climate effects.[89] And when it evaluated the net benefits of the rule, EPA included the co-benefits when calculating the total benefits of the rule.[90] Numerous other agency rulemakings follow this approach in analyzing net benefits from regulations, and can provide a useful model not only for this RIA but those for other forthcoming risk management rules.[91]

EPA should therefore include benefits from air pollution reductions in its discussion of the rule's net benefits or use a different terminology to describe its comparison of the rule's costs with a subset of its benefits, namely from increased caustic soda revenues and reduced incidences of cancer.

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[82] *See id.* at 7-1.
[83] *See* ECONOMIC ANALYSIS OF THE PROPOSED RULE, *supra* note 10, at ES-10 (acknowledging that benefits from air pollution reductions were excluded from EPA's net benefits estimates).
[84] *See* Ctr. for Biol. Diversity v. Nat'l Highway Traffic Safety Admin., 538 F.3d 1172, 1198 (9th Cir. 2008) (agencies conducting cost-benefit analysis "cannot put a thumb on the scale by undervaluing the benefits and overvaluing the costs").
[85] ANTHONY E. BOARDMAN ET AL., COST-BENEFIT ANALYSIS: CONCEPTS AND PRACTICE 2 (4th ed. 2018).
[86] Am. Trucking Ass'ns v. EPA, 175 F.3d 1027, 1051–52 (D.C. Cir. 1999), *rev'd on other grounds sub nom.* Whitman v. Am. Trucking Ass'ns, 531 U.S. 457 (2001).
[87] Bus. Roundtable v. SEC, 647 F.3d 1144, 1148–49 (D.C. Cir. 2011).
[88] *See* CSAPR RIA, *supra* note 16, ES-4, tbl. ES-4.
[89] *See id.* at ES-4, tbl. ES-4.
[90] *See id.* at ES-19, tbl. ES-7.
[91] *See, e.g.*, DOT & EPA, FINAL REGULATORY IMPACT ANALYSIS: THE SAFER AFFORDABLE FUEL-EFFICIENT (SAFE) VEHICLES RULE FOR MODEL YEAR 2021 – 2026 PASSENGER CARS AND LIGHT TRUCKS 1558-1610 (2020) (summarizing the benefits of vehicle emissions standards in air quality improvement and greenhouse gas reductions as well as consumer savings through decreased fuel usage).

V. EPA's Positive Revenue Price Scenario for Caustic Soda Is More Plausible than a Revenue Neutral Scenario

In assessing the overall benefits and costs of the rule, EPA seeks to estimate the potential revenue gains from caustic soda produced by chlor-alkali plants. Although the agency fairly concludes that there is a large degree of uncertainty in the Proposed Rule's effects on caustic soda prices, there are numerous reasons to expect that the RIA's revenue gain scenario is much more likely to occur than a revenue neutral scenario. The revenue gain would decrease the rule's expected costs to industry and increase the expected benefits of the Proposed Rule.

For example, in the primary analysis EPA assumes that when the proposed regulation halts the supply of diaphragm cell technology all producers switch to supplying high-quality caustic soda with membrane cell technology. In this scenario, it is likely that prices will increase for low-quality caustic soda. Over time, this will increase demand and prices for higher quality caustic soda produced with membrane cell technology.[92]

These changes would lead to overall positive effects on general welfare, and suggest that EPA's model of a constant price for caustic soda, with greater industry costs, is overly pessimistic.

Similarly, EPA examines a scenario in which all firms that rely on asbestos diaphragm cell technology continue producing low-quality caustic soda but now with non-asbestos diaphragm cell technology. In that case, if the marginal cost of producing low-quality caustic soda increases because it is more costly to produce with non-asbestos rather than asbestos diaphragm cell technology, the supply of low-quality caustic soda decreases. Given the upward pressure on price for low-quality caustic soda, demand for the high-quality caustic soda increases. As a result, the equilibrium price for low-quality caustic soda increases and the equilibrium quantity exchanged falls. Meanwhile, the equilibrium price for high-quality caustic soda rises and the quantity exchanged likewise increases.

EPA's analysis also fails to consider how changes in the market for caustic soda could affect the welfare of caustic soda buyers or producers who are already using technology without asbestos. For example, while producers that previously used asbestos might suffer some profit losses, gains in the market for caustic soda (for both producers and buyers) could more than compensate for such losses. EPA's limited focus on chlor-alkali facilities that still use asbestos could therefore lead the agency to further underestimate the net benefits of the rule.

[92] A low-price scenario is possible, but unlikely, as it would require that: 1) the demand for high-quality caustic soda is very inelastic for existing users, despite the possibility of substituting to low-quality caustic soda, and 2) relatively few buyers (compared to producers) of low-quality caustic soda shift over to the high-quality market, despite the soda's apparent "essential" nature.

VI. EPA's Separate Treatment of Legacy Uses Is an Inefficient Use of Agency Resources and Obscures the Full Benefits of the Proposed Rule

For years following EPA's 1989 attempt to regulate asbestos, Congress expressed significant concerns about the extensive time and resources that seemed necessary to assess whether chemical regulations were warranted.[93] As a result, when Congress amended TSCA in 2016, it did so with the explicit intention of reducing EPA's analytical burden when promulgating toxic chemical regulations.[94]

Despite this Congressional mandate, the prior administration chose to examine only a small subset of the risks from chrysotile asbestos uses and the associated costs and benefits of regulating these activities.[95] In doing so, EPA failed to follow Congress's intent to improve the pace and comprehensiveness of toxics regulations.[96] While Policy Integrity supports the decision of the current administration to move forward with this regulation and avoid further delays while completing its "part 2" risk evaluation,[97] EPA should not proceed in this manner for future risk evaluations and risk management rulemakings.

First, assessing and regulating chemical risks in a fragmented, piecemeal process is highly inefficient and imposes unnecessary administrative costs on the agency. There are also societal harms from a piecemeal effort to examine the health and environmental effects of chemicals. Exposed populations are left unprotected for greater periods of time, given the lengthy process of promulgating and finalizing rulemakings.[98]

Second, excluding certain exposure routes or conditions of use when assessing the costs and benefits of risk management rules could lead EPA to underregulate. For example, in the current rulemaking EPA does not assess how the proposed ban could lead to benefits from reductions in asbestos disposal or air releases, which could have enormous effects on the general

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[93] *See, e.g., Oversight Hearing on the Federal Toxic Substances Control Act, Joint Hearing before the S. Subcomm. on Superfund, Toxics, and Environmental Health & S. Committee on Environment and Public Works*, 111th Cong. 173 (2009) (statement of Sen. Max Baucus) ("[I]n spite of everything we know about the hazards of asbestos, in spite of a 10-year analysis and a 45,000-page record produced by EPA, the Agency was precluded from moving forward with an asbestos ban under a Court interpretation of TSCA.").

[94] *See, e.g.*, S. REP. NO. 114–67, at 18 (2015) (explaining that Congress sought to avoid imposing significant "evidentiary and analytic burdens" on EPA).

[95] *See* RISK EVALUATION FOR ASBESTOS, *supra* note 9, at 44 (outlining the conditions of use examined in the risk evaluation and stating that "EPA will consider legacy uses and other asbestos fiber types in Part 2 of the risk evaluation for asbestos")

[96] *See* Safer Chemicals, Healthy Families, 943 F.3d 397, 421 (9th Cir. 2019) ("[W]e hold that EPA's exclusion of legacy uses and associated disposals contradicts TSCA's plain language.").

[97] *See* EPA, Draft Scope of the Risk Evaluation for Asbestos Part 2: Supplemental Evaluation Including Legacy Uses and Associated Disposals of Asbestos (Dec. 2021), https://www.epa.gov/system/files/documents/2021-12/asbestos_part2_draftscope_epa-hq-oppt-2021-0254.pdf.

[98] On the lengthy timelines involved in administrative rulemakings, see Bethany A. Davis Noll & Richard L. Revesz, *Regulation in Transition*, 104 MINN. L. REV. 1, 55 (2019).

population.[99] And by considering management of legacy uses separately, EPA is unable to evaluate the cumulative benefits of the Proposed Rule alongside other measures. Scientific studies have demonstrated that greater exposure to asbestos can cause cancers to manifest more quickly.[100] Accordingly, EPA may underestimate the total health benefits of exposure reduction if it considers reductions achieved through different pathways sequentially rather than simultaneously (because it will assume a too-lengthy latency period and thus discount the benefits of avoided illness too heavily).[101] EPA should therefore ensure that future analyses of chemical risks and the costs and benefits of regulations include all reasonably known conditions of use.

VII. Conclusion

The RIA accompanying EPA's proposed regulation of chrysotile asbestos significantly understates the anticipated benefits of the rule. This underestimate results from ignored health effects, inappropriate assumptions regarding PPE use, unjustified decreases in populations expected to be at risk, and an unduly short timeline for assessing benefits. In light of the 2016 amendments to TSCA, relevant caselaw, and the agency's own guidelines on economic analysis, EPA should ensure that all avoided health harms are discussed in the cost-benefit analysis, even if they cannot be quantified and monetized. The agency should also clearly explain each step in its analysis, and it should avoid assumptions solely based on industry supplied data.

Sincerely,

Rachel Rothschild, Assistant Professor, University of Michigan Law School
Affiliated Scholar, Institute for Policy Integrity

Peter Howard, Economics Director, Institute for Policy Integrity
Jack Lienke, Regulatory Policy Director, Institute for Policy Integrity
Chelsea Pardini, Economics Fellow, Institute for Policy Integrity

Attachment

1) Jack Lienke & Rachel Rothschild, *Regulating Risk from Toxic Substances: Best Practices for Economic Analysis of Risk Management Options Under the Toxic Substances Control Act*, INST. POL'Y INTEGRITY (2021).

[99] *See* Healthy Building Network, Asbestos: Technical Report on Production, Imports, Use, End of Life, Exposure Scenarios, and Associated Environmental and Human Health Hazards 9–13 (2017) (describing large landfills that the chlor-alkali industry uses for asbestos disposal in locations throughout the southern and western U.S. as well as incidents of fugitive air releases from chlor-alkali plants).
[100] *See* NAT'L ACAD. SCIS., ENVIRONMENTAL MEDICINE 177 (1995) (explaining that "more intense exposures can result in latencies as short as 20 to 30 years" for mesothelioma); *compare with* ABT. ASSOCIATES, ESTIMATED VALUES OF AVOIDING CANCER RISKS 38 (Dec. 2021) (assuming a latency period of 44 years between exposure and disease onset).
[101] *See id.*

Appendix A: Break-Even Analysis

If we seek to know the number of deaths that the Proposed Rule must prevent to break even with the incremental industry costs, several assumptions are needed. For this reason, this analysis contains several cases. It is important to note that for all cases the estimates of the number of lives needed to be saved by the rule will be overestimates, because the rule does more than save lives, and this break-even exercise puts the burden of justifying the cost entirely on avoided mortality associated with cancer due to asbestos exposure.

A firm seeking to determine the break-even quantity sold of a good, *Q*, can use the following equation

$$Q = \frac{F}{p - c}, \tag{1}$$

where *F* represents the total fixed costs of production, *p* is the price of the good, and *c* is the marginal cost of producing the good. Translating this to our example, equation (1) can be rewritten as

$$Q = \frac{F}{VSL}, \tag{2}$$

where *Q* is now interpreted as the break-even number of lives saved, *F* represents the total costs of the Proposed Rule (because they are fixed from the perspective of each additional life being saved, this also implies that *c* is zero for our example of a ban on asbestos), and the value of statistical life, *VSL*,[102] replaces the price, *p*. The number of deaths needed to be avoided to break even with industry costs from the rule decreases in *V SL*. This implies that the higher the VSL, the asbestos ban needs to save fewer lives to break even with incremental costs. This becomes more complicated when we consider growth in GDP per capita, discounting, and latency periods.

To make equation (2) even more specific to this exercise, it can be written as

$$Q = \frac{NPV_{r,2020}}{VSL_{2020} * (1 + r)^{-t}}, \tag{3}$$

where $NPV_{r,2020}$ is the net present value of incremental costs for each discount rate in Table 3-8 of EPA's Economic Analysis of the TSCA Section 6 Proposed Rule for Asbestos Risk Management,

[102] VSL is a commonly used measure of a population's willingness-to-pay to avoid mortality risk. In this analysis, we use a VSL of $11.14 million from the analysis conducted on behalf of EPA by Abt Associates. *See* ABT. ASSOCIATES, *supra* note 100, at 3, 35.

Part 1.[103] The denominator represents the net present value of the VSL where *t* is the year that the lives are saved and *r* is the discount rate.

For simplicity's sake and to maximize the utility to EPA, this analysis assumes that the VSL remains constant.[104] It also preserves the same range of years as EPA (20 years) for costs and maintains estimates in $2020. The breakeven assessment includes cases for both the 3% and 7% discount rates when lives are expected to be saved in year 15, 20, 30, and 45 after the ban is instituted, respectively. It also includes a case where lives might be saved in any year from year 15 to year 45. In this case, the analysis employs the average discount factor associated with all fatalities being avoided in each year. The number of fatalities that the ban needs to prevent for each case are included in Table 1.

Table 1: The Number of Avoided Fatalities Needed*

	3%	7%
15 years	106	233
20 years	123	326
30 years	165	642
45 years	257	1,770
Average	159	538

*Based on VSL used in analysis done by Abt Associates (2021) and NPV of incremental costs in EPA's economic analysis for the part 1 asbestos rule.

This analysis implies that, if using a 3% discount rate, the proposed ban on asbestos needs to prevent only between 106 and 257 fatalities due to cancer caused by asbestos exposure to break even with the costs accrued by industry in 20 years due to a ban on asbestos. Table 2 provides the expected number of people that would need to be exposed for the ban to prevent a sufficient number of cancer fatalities to break even. Comparing these to the expected number of exposures in EPA's Risk Evaluation for Asbestos, Part 1 (148,963 - 149,136), even excluding expected consumer exposures (133,034 - 133,207), the Proposed Rule will always prevent enough fatalities to break even with costs when we consider a 3% discount rate.[105] When we consider a 7% discount rate, it prevents sufficient fatalities associated with fatal cancer due to asbestos exposure if they are prevented in year 20 or before.

[103] *See* ECONOMIC ANALYSIS OF THE PROPOSED RULE, *supra* note 10, at 3-17–3-18 tbl. 3-8.
[104] This also leads these estimates to be overestimates because VSL is increasing over time.
[105] *See* RISK EVALUATION FOR ASBESTOS, *supra* note 9, at 226 tbl. 4-56.

Table 2: The Number of Exposed People Needed*

	3%	7%
15 years	45,969	101,114
20 years	53,291	141,817
30 years	71,619	278,975
45 years	111,579	769,702
Average	69,176	233,762

*Based on VSL used in analysis done by ABT Associates, NPV of incremental costs in EPA's economic analysis for the part 1 asbestos rule, and OSHA’s 2.3/1,000 fatal cancer rate for workers exposed.

Appendix B: The Problem of Assessing Benefits Separately

Consider that EPA can regulate toxic chemical *x* under the Toxic Substances Control Act (TSCA). Regulating *x* leads to benefits through several channels, but in analyzing a regulation under TSCA, EPA chooses not to consider the benefits that manifest through pathways that are or can be regulated via another statute or regulatory program.[106]

1. Question 1

Does this requirement make it more difficult for EPA to justify regulating *x*?

1.1 Proposition

This requirement makes it more difficult to justify regulating *x*.

1.2 Proof

For simplicity, assume that there is one additional statute, such as the Clean Air Act (CAA), that allows for regulation of *x*. To justify regulating *x*, EPA must find that the benefits of the Proposed Rule (e.g., a ban of *x*) outweigh the costs. We can write this as

$$B_R \geq C_R, \tag{1}$$

where B_R represents the total benefits of the proposed rule. We can rewrite equation (1) as

$$B_{TSCA} + B_{CAA} \geq C_R, \tag{2}$$

where B_{TSCA} are the benefits of the proposed rule that manifest in exposure pathways exclusively belonging to the jurisdiction of TSCA, and B_{CAA} are the benefits that *also occur because of the proposed rule* but are those that accrue through a pathway that falls under an alternate statute (in this example, CAA). When EPA can only consider the benefits of the Proposed Rule that manifest in pathways exclusively under the jurisdiction of TSCA (i.e., not under the jurisdiction of other statutes), they must find that

$$B_{TSCA} \geq C_R. \tag{3}$$

Given that $B_{TSCA} < B_R$ for all $B_{CAA} > 0$, which means that there are benefits conveyed by the rule through a pathway that is under the jurisdiction of an alternate statute, it implies that inequality (3) is less likely to be satisfied than (1), so it is more difficult for EPA to justify the rule proposed to regulate *x*.

[106] Note that this discussion holds if there are multi-agency efforts to regulate *x*.

1.3 Discussion

Restricting EPA to consider only benefits that accrue in pathways that are not under the jurisdiction of other statutes and regulatory programs makes it more difficult for EPA to justify regulation. As the benefits that are expected to be generated by the Proposed Rule via an exposure pathway that falls under CAA increase (the greater the value of B_{CAA}), this more demanding decision rule becomes more problematic.[107] There are cases where, despite it being cost-benefit justified, EPA will not be able to justify it according to the restrictive decision rule. That is, this decision rule will lead to lower than optimal levels of regulation.

Regardless, excluding benefits that would be unambiguously generated by a Proposed Rule render its cost-benefit analysis incomplete. An optimal decision rule to regulate or not via TSCA must consider the benefits that result from regulating *x* under TSCA. This approach is also consistent with EPA's statutory authority under TSCA, which clearly allows EPA to consider all exposure pathways and conditions of use before deciding whether to regulate under TSCA or another statute.[108]

2. Question 2

Does this restriction lead to socially excessive levels of *x* (assuming TSCA provides EPA the authority to choose the level of *x*)?

2.3 Proposition

This restriction leads to socially excessive levels of *x*.

2.2 Proof

Consider that EPA seeks to maximize net benefits by choosing some level of the toxic chemical *x*. Without restriction, EPA chooses *x* to solve

$$max\{B_R(x) - C_R(x)\}, \tag{4}$$

where $B_R(x)$ are the total benefits associated with some level of *x* being present and $C_R(x)$ are the total costs. Assume that $\frac{\partial B_R(x^*)}{\partial x} > 0$, $\frac{\partial^2 B_R(x)}{\partial x^2} \leq 0$, $\frac{\partial C_R(x^*)}{\partial x} > 0$, and $\frac{\partial^2 C_R(x)}{\partial x^2} \geq 0$. We know, however, that the costs to society of the presence of toxic chemical *x* occur across multiple exposure pathways. Some of these exposure pathways fall exclusively under the jurisdiction of TSCA, and some also overlap with the jurisdiction for other statutes and regulatory programs (e.g., CAA). We can rewrite equation (4) as

[107] If the benefits that accrue through this pathway are negligible ($B_{CAA} \rightarrow 0$), then the decision rule in (3) is less problematic.

[108] *See* 15 U.S.C. § 2605(b)(4)(F)(i) (providing that EPA authority to integrate and assess all available information on exposures for the conditions of use of the chemical substance).

$$max\{B_R(x) - C_{TSCA}(x) - C_{CAA}(x)\}, \quad (5)$$

When EPA is allowed to consider both pathways of societal costs due to x, the first-order condition is

$$\frac{\partial B_R(x^*)}{\partial x} = \frac{\partial C_{TSCA}(x^*)}{\partial x} + \frac{\partial C_{CAA}(x^*)}{\partial x}. \quad (6)$$

In that scenario, there is some optimal level x^* that satisfies (6). Now consider that EPA can only account for *some* of the societal costs of x (i.e., EPA can only consider $C_{TSCA}(x)$) when setting the level permitted in society. This forces EPA to solve an alternate maximization problem with the following first-order condition.

$$\frac{\partial B_R(x')}{\partial x} = \frac{\partial C_{TSCA}(x')}{\partial x}. \quad (7)$$

This condition can be satisfied by some level x'. Now, EPA will choose an inefficiently high level of the toxic chemical ($x' > x^*$) given that the marginal cost of x to society increases in x (social costs are convex) and there are diminishing returns to society from x.

2.3 Discussion

Therefore, EPA will choose too high a level of x when only considering some of the relevant exposure pathways. Society experiences all the costs associated with the toxic chemical, but when EPA fails to account for all of them, it leads to too high a level being permitted in society.[109]

[109] Relying on this incomplete analysis could lead to socially insufficient levels of regulation in the future (e.g., if EPA relies on the cost-benefit analysis for TSCA when regulating under CAA).