

COMMENTS ON CPSC 2013-0028: PROPOSED SAFETY STANDARD FOR OPERATING CORDS
ON CUSTOM WINDOW COVERINGS

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Summary: I offer these comments as a pioneer over the past 35 years in developing methods in current use for quantitative risk assessment (QRA) and regulatory economics, and as a lifelong and unshakable advocate of the proposition that environmental, health, and safety regulations should have benefits that justify their costs.² Some advocates of safety oppose cost-benefit analysis (CBA), but I regard it as our best tool (albeit one in need of continuous improvement). But it is impossible to make a reasoned determination about the benefit-cost ledger when costs are exaggerated and benefits are under-estimated, as is the case here. I offer several observations about these two reinforcing biases in the NPRM.

Although there are only two sides to the cost-benefit ledger, there are really three different activities that analysts undertake. This is because the analysis of regulatory benefits bifurcates into first the estimated harms themselves that regulation is designed to reduce/eliminate (the province of risk assessors), and then proceeds to the monetization of those harms into dollar units commensurable with cost (the province of regulatory economists). I urge CPSC to recognize that in the current NPRM, it has managed to (1)

¹ I prepared these comments with partial support from Consumer Reports and from Consumer Federation of America. These views are my own and not necessarily those of either CR or CFA.

² I was the chief regulatory official at the U.S. Occupational Safety and Health Administration (OSHA) in the Clinton administration, and later OSHA's Regional Administrator in the six Rocky Mountain states in the G.W. Bush administration. Since leaving government, I have taught courses in quantitative risk assessment, regulatory policy, and cost-benefit analysis at graduate schools of public health (Univ. of Michigan), public administration (Princeton Univ.), medicine (Rutgers Univ.) and law (Univ. of Pennsylvania). I have published over 75 peer-reviewed articles, and co-authored four books, analyzing the costs and benefits of controls on hazards including beryllium dust, perchloroethylene exposure, methylmercury ingestion, repeated head trauma in contact sports, ergonomic injuries in the workplace, tuberculosis transmission, bird strikes on passenger aircraft, and many others. I am one of the two experts who were appointed to both of the National Academy of Sciences committees convened since the 1983 "Red Book" was published, to review federal-agency risk assessment methodology (in 1994 and 2008).

underestimate the harms, (2) under-value their monetary consequences, and (3) exaggerate the costs of improved safety, all at the same time.

I believe that the benefits of this proposed rule exceed its costs, and that if CPSC improves its cost-benefit analysis (CBA), it will demonstrate this. But even if more reasonable estimates of cost and benefit still leave the revised comparison “too close to call,” the Consumer Product Safety Act (Sec. 9(f)(3)(E)) makes clear that CPSC must find merely that the benefits of a rule “bear a reasonable relationship to its costs.” This is a more permissive standard than in the various Executive Orders for regulatory review, which apply to Cabinet agencies—these (e.g., EO 13563, and its predecessors EO 12866 and 12291) now require that agencies find that benefits “justify” (13563 and 12866) costs, which previously (12291) was the stricter verb “outweigh” costs. In contrast, “a reasonable relationship to” clearly anticipates situations where costs exceed benefits, but where a regulation is warranted or required because CPSC and affected stakeholders rationally regard the benefits as worth reaping even if greater costs might be imposed.

There are various ways in which a given amount of benefits might “justify” a somewhat larger cost (again, “justify” is not in fact required for CPSC). In particular, distributional concerns might dictate that a slightly “inefficient” outcome might promote equity to such an extent that the regulation is more than “reasonable.” Or, consideration of uncertainty on both sides of the ledger might dictate that although *the expected net benefit* is numerically negative, the portion of the uncertainty distribution where net benefits are much larger than expected (i.e., where benefits are higher than expected and costs lower than expected) outweighs the rest of the uncertain outcomes. Finally, *quantitative CBA estimated at the population level must sometimes yield to common sense at the individual level: diffuse and de minimis costs simply should not supersede concentrated and life-changing risk reduction benefits.*

Here I will assert and show that all three of these ways in which a revised CBA (even if it is found to have expected total costs somewhat greater than expected total benefits)

can and should still be considered to favor promulgation, in fact apply to this rule and this analysis.³

1. *Benefits are Under-Estimated:*

It is baffling to me that CPSC provides only a (maximally) overconfident point estimate of the annual number of fatal and non-fatal injuries caused by window cords, when its own guidance, as well as peer-reviewed studies, use the same primary data and properly include the uncertainty in the estimation! As CPSC knows as well as anyone (Schroeder and Ault, 2001), the NEISS dataset only enumerates injuries from approximately 100 hospitals, leaving more than 5,000 other hospitals' experience uncounted. This kind of sampling frame is completely reliable, and (perhaps with minor adjustments for hospitals who enter and leave the sample over time) the *central estimate* of the number of injuries nationwide can be derived by "scaling up" the sample to the population.

But each scaled-up estimate is surrounded by statistical uncertainty, which CPSC has elucidated in the past but fails utterly to do here. Schroeder and Ault 2001 provide various formulae and bootstrap methods to estimate the width of the confidence interval containing the true value of the national injury toll, and Onders et al. (2018) show clearly how wide this interval actually is given the ratio of the number of sampled hospitals to the total. Table 1 in Onders et al., for example, estimates 271 fatal injuries over a 26-year period, an annual estimate of 10.4 fatalities that is very concordant with the 9/year estimate in this NPRM. *But Onders et al. estimate that we cannot rule out with 95% confidence that there in fact were as many as 567 fatalities over that same period, for an annual rate of nearly 22 fatalities/yr., more than twice the CPSC central estimate.*

³ In these comments, I will parse benefits and costs according to what many experts consider the most logical schema: rather than defining benefits as "all the good things on either side of the ledger" and costs "all the bad things," I regard the "benefits side" as containing positive *and negative* effects on human welfare with regard to goods not traded in markets, such as longevity, quality of life, and the like. For example, if a regulation reduced one safety risk but increased another, the latter effect would be a "negative benefit," not a "cost." Everything else goes on the "cost side," which contains negative *and positive* effects on welfare with regard to goods that are traded in markets. For example, if a regulation reduces the expected number of product recalls, that is a "negative cost" to manufacturers, not a "benefit." Choosing one way to parse over another has no effect on the net amount of [benefit minus cost], but it can make the comparison more clear.

CPSC's own Information Quality Guidelines (<https://www.cpsc.gov/Research--Statistics/Information-Quality-Guidelines>) promise that the Commission will specify "each appropriate upper-bound or lower-bound estimate of risk" in addition to the central-tendency estimate, and yet this NPRM acknowledges no uncertainty in risk whatsoever. *This is a fundamental deficiency that must be corrected.* It is even more curious that CPSC here has provided a confidence interval on cost; this part of its analysis actually goes beyond (in a good way) standard regulatory practice (Finkel, 2014), given that regulatory economists have generally lagged decades behind their colleagues in risk analysis in presenting estimates with their uncertainties highlighted. I don't believe I've ever seen a Regulatory Impact Analysis (RIA) that contains confidence intervals for cost but merely a point estimate for risk; the obverse is the usual case.

Once (I hope) CPSC computes the uncertainty bounds on the number of each major injury type, CPSC should understand that for decades, U.S. federal regulatory agencies have routinely (and without much controversy) used upper-bound estimates of risk in preference to central-tendency estimates thereof. For example, all of EPA's "unit risk factors" that determine the estimated risk of a carcinogenic air or water pollutant at a specific concentration are openly designed to be "plausible upper bounds"—EPA and other agencies essentially use the 95th percentile upper confidence limit on the cancer response observed in small groups of laboratory animals to fit the dose-response function, which is exactly analogous to accounting for the possible underestimation of the injury count inherent in the NEISS sampling frame.⁴ No less an authority than the U.S. Supreme Court has approved of this practice, in the one major opinion in which it delved into the mechanics of QRA: in its 1980 remand of the OSHA benzene regulation, the Court required OSHA to use QRA, but explicitly stated that "so long as they are supported by a body of reputable scientific thought, the Agency is free to use conservative assumptions in interpreting data... risking error on the side of overprotection rather than underprotection" (Industrial Union Dept., AFL-CIO v. American Petroleum Institute, 448 U.S. 607).

⁴ Of late, EPA has been moving towards a "benchmark concentration" approach to cancer risk assessment, and for this it uses the *lower* bound of the concentration associated with a given probability of harm, which is exactly the same approach to precautionary interpretation of uncertainty as it used with the prior approach.

I therefore recommend strongly that CPSC use for benefits-valuation purposes plausible upper-bound estimates of fatal and non-fatal injuries derived from an improved analysis of the NEISS data. Doing so would not have CPSC placing a “thumb on the scale;” rather, it would acknowledge that analytic errors that result in needless human suffering (ignoring the upper half of the uncertainty range for harm) are more dire than errors that result in needless expenditures on safety (ignoring the lower half of the range). There is a large body of literature supporting the use of “conservative” estimates of risk as a cornerstone of rational and humane risk management (e.g., National Research Council, 1994; Hattis and Anderson 1999; Stirling and Gee 2002). According to the Onders et al. analysis, this one improvement would *more than double* the estimated benefits of the Window Coverings rule.

2. Benefits are Under-Valued:

- In its RIA, CPSC uses a standard estimate for the “value of a statistical life” (VSL)—\$9.2 million—but also estimates the benefits of the rule using a higher estimate of \$27.6 million (three times the standard amount) to account for the special value society may place on the life of an infant or very young child. Over the last ten years, I have led two National Science Foundation projects intended to improve the way regulatory agencies value life-prolonging benefits, with special emphasis on designing experiments to measure the altruism components that standard VSL studies assiduously remove from consideration. I have no doubt that the \$9.2 million or similar VSL figures underestimate the value of averting an infant/child fatality. But the studies CPSC cites for multiplying the VSL by a factor of 3 (87 *Federal Register*, p. 1045) do not fully capture the kind of underestimation here. Most of the underlying studies that show a 2- to 3-fold increase in “child VSL” (see, e.g., Robinson et al. 2019) actually elicit from parents their willingness to pay for an *annual* risk reduction of X chances per 100,000 that might begin early in the life of their infant and continue for decades. In other words, the willingness is to pay for a lower *continuing* probability of a fatality that

could manifest itself in the death of a child, but would more likely come to pass when the child was older. In contrast, the tragic eventuality here by definition would occur *to* an infant or very young child, not merely involve a risk that would accrue *beginning* in infancy. In the absence of sufficient research to estimate the VSL for acute fatal injury to infants and young children, CPSC should supplement its benefits estimate per fatality with one that makes use of the literature estimating the value of a *year of potential life lost* (YPLL). CPSC should consider the effect on the benefit-cost comparison of valuing an infant or young child fatality at approximately 80 times the value of a YPLL, as U.S. life expectancy is now approaching 80 years. HHS's Guidelines for Regulatory Impact Analysis (2016) recommend a value of \$490,000 per life-year extended, which would yield a value of **\$39.2 million per infant's/child's life** prolonged by safer window cords. I note also that because these fatalities by definition occur within a very few years of the expenditure that CPSC is estimating the willingness to pay for, we have in effect an annual stream of costs whose benefits accrue nearly simultaneously. Thus, there is no bias introduced by discounting future costs and future benefits at the same rate, a concern that might apply if each year's costs were used to purchase benefits that might not accrue until decades later. Finally, I emphasize that I am encouraging CPSC to consider YPLL as a reasonable complementary measure of VSL for infants and young children, but I do *not* encourage CPSC or other agencies to use YPLL measures so as to ascribe less than one standard VSL to fatalities that would occur to very old people (Simon et al 2019). I see no inconsistency here, as we already have ample stated-preference results that support the use of the standard VSL for the elderly, but lack such data for acute injuries to infants and young children that arguably deserve a premium above the valuation we give to any other premature death.

- CPSC should also reconsider how it values injuries from window cords, to incorporate more of the spectrum of consequences from known incidents. The CPSC estimate of \$50,300 (on average) cost per injury purports to quantify both direct costs and the additional costs of pain and suffering (based on jury awards), but it seems that this average estimate fails to account for the long right-hand tail of the distribution of costs. According to the National Safe Kids Campaign (2004), "[t]he total cost of a single

near-drowning that results in brain injury can be more than \$4.5 million.” This type of injury, therefore, can result in direct costs (not including pain and suffering) that are more than *ten times greater* than the highest single estimate in the CPSC Injury Cost Model (CPSC 2021, p. 169). At a minimum, CPSC should separate its estimates for injuries that do and do not cause brain damage, and sum the (weighted) average costs for each.

- CPSC should estimate the value of avoiding parental grief (van den Berg et al., 2012; Holland, 2014) and add it to the value of the averted fatalities themselves. I have no expertise in this matter, but I do call your attention to the van den Berg et al. study, which found that each parent whose life was changed by the death of a young child had an income trajectory that was depressed by an average of \$2,600 per year. Assuming a 3% discount rate and a 30-year time horizon, this direct loss of income would amount to over \$100,000 per couple. Obviously, this is a quantifiable disbenefit, but the non-quantifiable effects of grief would likely be more salient, as this quote from Holland 2014 indicates: “Despite the passage of time and renewed interest in living, the loss of a child is a constant part of the whole person. All of the parents indicated that there is no ‘getting over’ the death of a child... You know you always have this hole that you can’t fill – as far as things being better, the pain is not so severe – but it’s always there.”

- CPSC should incorporate an estimate of the benefit of reducing/eliminating “near misses” from window-cord incidents that are observed and rectified before any injury or fatality occurs. These are currently not counted at all in the benefits estimation, but clearly these events take a toll on the welfare of parents.

- Finally, CPSC should consider estimating (or adding to the litany of benefits that are unquantifiable but part of the “reasonable relationship to costs”) the value of safer window coverings as an “experience good” (Sunstein 2019). As Prof. Sunstein (the OIRA administrator from 2009-12) observes, a feature like an automobile backup camera might not only have safety benefits, but might involve “changes in tastes and

values, which are endogenous to experience. After using a product, people's tastes might shift, not only because they know something they did not know before (belief-induced preference change), but also because they end up developing altogether new likes and dislikes." He concludes that "under imaginable assumptions, experience goods provide a plausible ground for regulation on social welfare grounds, and that rearview cameras appear to be a case in point."

3. Costs are Over-Estimated:

- There is a large and ever-growing literature (see, e.g., p. 110 in Finkel 2014 and accompanying footnotes/references) attesting to the common-sense observation that estimates of the cost of complying with environmental/health/safety regulations made before promulgation are generally, and sometimes grossly, exaggerated when compared to realized costs after promulgation. Putting aside the obvious possibility that regulated industries have an incentive to provide inflated cost figures, in order to skew the cost-benefit comparison and perhaps escape regulation altogether, case after case of *post hoc* cost accounting reveals that compliance simply becomes more efficient and cheaper due to technological learning, economies of scale (which can't be manifest in pre-regulatory unit cost estimates), and other factors. Sometimes these overestimates can be quite significant; just last month, for example, EPA stated (EPA 2022, at page 7651) that it believes that in hindsight, its 2011 Regulatory Impact Analysis for the costs of Mercury and Air Toxics Standards for coal- and oil-fired electric utility plants "may have overestimated annual compliance costs by approximately \$7 billion." Given that the prior estimate was \$9.6 billion annually, this overestimation was, one might say, monumental in size, and it makes one wonder how many EPA regulations that appeared to have failed a cost-benefit test actually would have done much more good than harm had any reasonable estimate of cost been offered during notice and comment. While there is no universally-accepted method for anticipating the degree of overestimation in *ex ante* cost estimates, EPA (2010 and 2016) has used a two-part correction: it has recommended that (1) estimates of future costs should

decrease by 20% after the first two years of implementation, due to “volume-based learning,” and an additional 20% after the fourth year, after which time economies of scale are assumed to have been fully realized; and (2) estimates should decrease by an additional 3% each year for the first five years, to reflect “time-based learning.” I urge CPSC to apply decrements such as these to try to account for some of the inherent overestimation in its cost estimates.

- CPSC should estimate, and subtract from its total cost estimate, the expected savings to manufacturers resulting from fewer product recalls and tort liability actions, thanks to the safer products required under this rule.

Conclusion—Risk-Benefit Decisionmaking:

In my opinion, even the CBA in the NPRM, with its exaggerated costs and underestimated benefits, evidences a “reasonable relationship” between the two sides of the ledger. Even before correcting any of the biases mentioned in these comments, any credible uncertainty analysis on the benefits side will demonstrate that the confidence intervals for benefit and for cost *overlap*, which is one of the conditions under which the two sides of the ledger clearly can be deemed “reasonably related.”

A second argument for the cost-benefit relationship here being eminently reasonable comes from my former agency (OSHA), which, like the CPSC, operates under a statute that does not force it to do quantitative cost-benefit balancing and find that the quantity [costs minus benefits] has a positive numerical sign. I’ve already mentioned the 1981 *Benzene* case, in which the Supreme Court gave its approval to OSHA regulations that would reduce a “significant” risk to employees. The parallel case, decided later in 1981, is the *Cotton Dust* case (*American Textile Manufacturers Institute v. Donovan*, 452 US 490), in which the Court ruled that an OSHA standard is not “economically feasible” unless OSHA can show that the regulated “industry will maintain long-term profitability and

competitiveness.” So reading the cases together, the Supreme Court has interpreted the Occupational Safety and Health Act to require a *kind* of CBA that doesn’t require numerical subtraction, but is still a cost-benefit test: if OSHA can eliminate a significant risk without threatening the competitive structure of an industry sector, it has *de facto* required controls that do more good than harm, and pass a cost-benefit test.

CPSC is proposing the same kind of cost-beneficial intervention here: there is no question that the risk to young children is significant, and I have seen no evidence or argument that the price increases that will accompany the rule in any way threaten the long-term profitability of the sector as a whole. Again, I believe the proposal passes a quantitative cost-benefit test, but I’m suggesting here that it also passes the more-good-than-harm test the Supreme Court imposed upon OSHA.

Finally, I offer one other argument why the benefits of this rule (even before CPSC considers uncertainty, various non-quantified but important benefits) justify their costs (even before CPSC considers the exaggeration of cost inherent in its current analysis). For decades, scholars and practitioners have recognized the notion of *de minimis* risk—probabilities of *individual* harm that are so low that no combination of them can or should add up to measurable harm to the population. For example, EPA would never regulate a pollutant that posed an excess lifetime risk of 1 chance in 2 million to every U.S. citizen—it is below the lowest benchmark for *de minimis* risk (10^{-6}) any agency considers. This is so even though 330 million of these tiny increments of risk could be construed as causing about 2.4 “excess deaths” per year nationwide (330 million divided by 2 million, divided by 70 years), and even though these “statistical fatalities” could be valued at about \$24 million annually using the standard VSL.

But in order to accept that some risks are “too small to matter,” we must also acknowledge that some *costs* must also be *de minimis*. Economists universally agree that income exhibits decreasing marginal utility (Cranor and Finkel, 2018), which is just another way of observing that at some point, trivial marginal costs can be “rounded down to zero” and not summed so as to give the appearance of being large at the population level merely because they affect large numbers of citizens. In this case, the CPSC rule would

impose costs upon *far more citizens than the number who will benefit from it*. This is a feature of a regulation of this kind that mitigates in favor of it passing a cost-benefit test, simply because *concentrated risks can clearly be viewed as outweighing diffuse costs*. Here, on the cost side, CPSC estimates there are about 140 million window coverings purchased each year, which I believe implies there are tens of millions of individual consumers who would be affected by the higher prices resulting from the rule. Even if each purchaser bought 7 coverings at a time on average (that is, 20 million consumers), the total national cost of roughly \$250 million/yr. would comprise many increments of \$12.50 per year per person. Arguably, this cost is *de minimis* to anyone who bears it; the average driver buys about 500 gallons of gasoline per year, so a \$12.50 annual increment is equivalent to the price at the pump rising by 2.5 cents/gallon. A “shock” that caused the pump price to rise from (say) \$3.10 to \$3.13 would, I suggest, not be felt by any consumer.

But on the “risk side,” a maximum of about 3.5 million couples (the parents of the 3.5 million babies born each year) will experience risk reduction from the rule, which means that the benefits will be divided among fewer persons, making each one greater. Even considering only fatalities (not the larger number of serious injuries), with about 10 annual infant/child fatalities nationwide, the annual risk to each couple is about 1 in 350,000, which is substantially greater than the 10^{-6} (per *lifetime*) risk EPA and other agencies consider significant. So another way to express the concentrated-versus-diffuse nature of this regulation is that “only on the benefits side of the ledger are there any effects on welfare, positive or negative, that exceed *de minimis* amounts.”

To conclude, this CPSC rule, suitably revised in accord with some or all of the suggestions herein, passes a strict cost-benefit balancing test, amply passes a “reasonable relationship to” test, and fundamentally promotes equity, because it imposes trivial costs upon the many for the sake of avoiding the ultimate tragedy to befall the few.

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