Bad Math in CERCLA Apportionment: The Untold Tale of *Burlington Northern*

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On May 4, 2009, the Supreme Court issued a decision that changed the landscape of liability allocation under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).[1] Before this decision came down, courts typically held parties jointly and severally liable for cost-recovery actions.[2] Now, a CERCLA defendant can make a showing that there is a "reasonable basis for apportionment," thus allowing defendants to avoid taking on the potentially hefty liability of orphan shares.[3] Although there is much to say about the future legal application of this apportionment standard, this piece takes a much more narrow perspective: the apportionment formula originally used by the district court and upheld by the Supreme Court cannot be justified mathematically and, in fact, drastically distorts a defendant's true share of liability. I will explain the district court's apportionment formula, illustrate why it distorts apportionment, and propose a more accurate and flexible formula.

The district court considered three factors in apportioning liability: volumetric share of the contributing chemicals, time that defendant owned the relevant parcel of land, and percentage area of the contaminated land.[4] Specifically, the district court found that the defendant contributed two-thirds (approximately 66%) of the chemicals that contaminated the property, owned 19% of the site's surface area, and owned the parcel for 45% of the relevant time (based on the duration of disposal by all parties at the site).[5] The district court then multiplied these numbers together to find the defendant's proportional share of

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[1] Burlington N. v. United States, 129 S. Ct. 1870 (2009); Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C. §§ 9601– 9675 (2006).

[2] *See, e.g.*, United States v. Chem-Dyne Corp., 572 F. Supp. 802 (S.D. Ohio 1983) (finding joint and several liability in a CERCLA action); *In re* Bell Petroleum Serv., Inc., 3 F.3d 889, 901– 02 (5th Cir. 1993); United States v. Monsanto Co., 858 F. 2d 160, 171– 73 (4th Cir. 1988); O'Neil v. Picillo, 883 F.2d 176, 178 (1st Cir. 1989); United States v. Alcan Aluminum Corp., 964 F.2d 252, 268 (3rd Cir. 1992).

[3] *Burlington Northern*, 129 S. Ct. at 1881.

[4] *Id.* at 1882.

[5] *Id.*

liability: 0.66 x 0.45 x 0.19, which equaled approximately 6%. Then, to account for potential errors in fact finding, the district court increased that figure by 50% to equal a total of 9%.[6] The district court's apportionment formula, represented graphically, looks like this:

$$\frac{\text{Defendant's chemical contribution}}{\text{Total number of chemicals}} \times \frac{\text{Defendant's time owned}}{\text{Total duration of time}} \times \frac{\text{Defendant's surface area}}{\text{Total surface area}}$$

The problem with this formula is that it does not manipulate these fractions correctly. Instead of weighting each factor and having those weighted parts add up to a whole, i.e. one, the court multiplied the fractions together, which makes the share artificially smaller. This proposition can be illustrated with an intuitive example. Imagine a situation with two successive owners of a parcel of land. Each owns 50% of the surface area, for 50% of the relevant time, and contributes 50% of the contaminants. Intuitively, each should be 50% liable for the response costs. Under the district court's formula, however, these percentages would be multiplied together. This formula results in 0.50 x 0.50 x 0.50 = 0.125, or 12.5%. The margin of error would bring this figure up to 18.75% - still far short of the true share of 50%. Similarly, it is intuitively strange that the railway in *Burlington Northern* had 6% liability when its lowest fractional share of liability was 19%.[7]

The proper manipulation of fractional shares requires weighting the factors so that they add up to one. For example, three equally weighted factors would each count as one-third of the whole. The simple example of equally liable successive owners would be calculated like this: (0.5 / 3) + (0.5 / 3) + (0.5 / 3) = 0.5. The *Burlington Northern* calculation, assuming equal weighting, would look like this: (0.19 / 3) + (0.45 / 3) + (0.66 / 3) = 0.43, or 43%.

Unfortunately, this equation is likely too simple to be useful in many CERCLA cases because the assumption of equal weighting can quickly disappear. For example, we could change one fact in the example of equally liable successive owners, then a different weighting will be

[6] *Id.*

[7] There are times when the total liability could be lower than the lowest fractional share, when those fractions are viewed within the district court's framework. I will resolve this problem when I discuss weighting of factors in my proposed formula.

required. Assume that each owned adjacent parcels for 100% of the relevant time, and that these parcels constituted one site. Each has still contributed 50% of the chemicals and owns 50% of the surface area, so reliable intuition still shows a 50% share of liability for each. But, were one to mechanically apply the above formula, the result would be incorrect: (0.5 / 3) + (0.5 / 3) + (1 / 3) = approximately 0.66. This result is incorrect because the factors are not properly weighted. The time owned should be weighted at zero, since it offers no help in discerning who contributed to the contamination of the site. Because the time owned is an overlapping factor across each of the owners, the numbers used add up to more than one and invalidate the assumption used in the formula.[8] Volumetric apportionment will not suffer from this error, since its proportional shares cannot overlap in this way. Courts will have to decide for themselves how to weigh each factor in each individual case. Since the mathematics can get rather complicated, courts might want to employ experts or special masters to apportion liability correctly.[9] Also, it should be noted that courts can apply other theories of liability distribution that might be more appropriate, e.g. apportioning by market share.[10]

[8] Of course, a total other than one is also acceptable. For example, a grade point average is typically on a scale from 1.0-4.0. I use one as the total here because it keeps the percentages intact.

[9] Presumably this would have happened in *Burlington Northern*, but the parties used a "scorched-earth" strategy and did not give the district court any help in calculating a proper apportionment. Thus, the district court created its own apportionment calculus *sua sponte*.

[10] *In re* Methyl Tertiary Butyl Ether (MTBE) Products Liability Litigation, 643 F.Supp.2d 461 (S.D.N.Y. 2009) (adopting a market share liability approach after considering *Burlington Northern*'s standard for apportionment).