FOR PUBLICATION

UNITED STATES COURT OF APPEALS FOR THE NINTH CIRCUIT

UNITED STATES OF AMERICA, *Plaintiff,* and DEPARTMENT OF TOXIC SUBSTANCES CONTROL, STATE OF CALIFORNIA, *Plaintiff-Appellant,* v. BURLINGTON NORTHERN & SANTA FE RAILWAY COMPANY, as successor in interest to the Atchison, Topeka & Santa Fe Railway Company; UNION PACIFIC TRANSPORTATION COMPANY, as successor in interest to the Southern Pacific Transportation Company; SHELL OIL COMPANY, *Defendants-Appellees.*	No. 03-17125 D.C. Nos. CV-92-05068-OWW CV-96-06226-OWW CV-96-06228-OWW

UNITED STATES OF AMERICA,
Plaintiff-Appellant,

and

DEPARTMENT OF TOXIC SUBSTANCES CONTROL, STATE OF CALIFORNIA,
Plaintiff,

v.

BURLINGTON NORTHERN & SANTA FE RAILWAY COMPANY, as successor in interest to the Atchison, Topeka & Santa Fe Railway Company; UNION PACIFIC TRANSPORTATION COMPANY, as successor in interest to the Southern Pacific Transportation Company; SHELL OIL COMPANY,
Defendants-Appellees.

No. 03-17153

D.C. No. CV-92-05068-OWW

UNITED STATES OF AMERICA;
DEPARTMENT OF TOXIC SUBSTANCES CONTROL, STATE OF CALIFORNIA,
Plaintiffs-Appellees,

v.

BURLINGTON NORTHERN & SANTA FE RAILWAY COMPANY, as successor in interest to the Atchison, Topeka & Santa Fe Railway Company; UNION PACIFIC TRANSPORTATION COMPANY, as successor in interest to the Southern Pacific Transportation Company,
Defendants,

and

SHELL OIL COMPANY,
Defendant-Appellant.

No. 03-17169

D.C. No.
CV-92-05068-OWW

ORDER AMENDING OPINION AND AMENDED OPINION

Appeal from the United States District Court
for the Eastern District of California
Oliver W. Wanger, District Judge, Presiding

Argued and Submitted
September 12, 2005—San Francisco, California
Submission Withdrawn September 14, 2005
Resubmitted March 16, 2007

Filed March 16, 2007
Amended September 4, 2007

Before: Betty B. Fletcher, John R. Gibson,* and
Marsha S. Berzon, Circuit Judges.

*The Honorable John R. Gibson, Senior United States Circuit Judge for the Eighth Circuit, sitting by designation.

Opinion by Judge Berzon

COUNSEL

Aaron P. Avila, Department of Justice, Washington, D.C., argued the case for appellant EPA; Kelly Johnson, Acting Assistant Attorney General, David C. Shilton, James R. MacAyeal, and John T. Stahr, Department of Justice, Environment and Natural Resources Division, Washington, D.C., Allyn Stern, Office of Regional Counsel, EPA, were on the briefs for appellant EPA.

Reed Sato, Deputy Attorney General of the State of California, Sacramento, California, argued the case and was on the briefs for appellant California Department of Toxic Substances Control; Bill Lockyer, Attorney General of the State of California, Tom Greene, Chief Assistant Attorney General, and Theodora P. Berger, Senior Assistant Attorney General, Sacramento, California, were on the briefs for appellant California Department of Toxic Substances Control.

John F. Barg, San Francisco, California, argued the case for appellees Burlington Northern & Santa Fe Railway Company and Union Pacific Transportation Company; Marc A. Zeppe-

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Michael K. Johnson, San Francisco, California, argued the case for appellee-cross-appellant Shell Oil Company; Randall J. Heldt, Shell Oil Company, Houston, Texas, was on the briefs for appellee-cross-appellant Shell.

ORDER

The opinion filed March 16, 2007, slip op. 3209, and published at 479 F.3d 1113 (9th Cir. 2007) is hereby amended as follows:

1. Replace <the State of California> with <the defendant oil companies> in the second sentence of footnote 30 on page 3250 of the slip opinion, 479 F.3d at 1139.

2. In the last paragraph of the opinion, on page 3256 of the slip opinion, 479 F.3d. at 1142, replace <The Railroads . . . the harm at the Arvin site.> with <The Railroads . . . the harm at the Arvin site, except with regard to the so-called "Dinoseb hot spot."[32]>

3. Add the following text as footnote 32: <The district court found that the "Dinoseb hot spot" was a discrete area contaminated by Dinoseb (a Dow product) as the result of a major spill in 1983, that Shell did not manufacture or ship that product, and that Shell thus bore no responsibility for any part of the $1.3 million cost of cleaning up this discrete spill. The governments did not challenge this finding on appeal. That finding therefore stands, and the district court should not include the $1.3 million dollar cleanup costs for the "Dinoseb hot spot" in the calculation of Shell's liability.>

The petition for rehearing and petition for rehearing en banc remain pending.

OPINION

BERZON, Circuit Judge:

A now-defunct company, Brown & Bryant, Inc. (B&B), owned and operated a facility at which toxic chemicals were stored and distributed. Part of the land on which the chemical operation was located was owned by two railroad companies (the Railroads), and some of the chemicals used by B&B were supplied and delivered to the facility by Shell Oil Company (Shell). Because toxic chemicals remaining at the facility threatened groundwater and may continue to do so in the future, the United States Environmental Protection Agency (EPA) and the State of California's Department of Toxic Substances Control (DTSC) spent a considerable amount of money to clean up the site and may need to spend more in the future. The two agencies sought to recover these response costs under the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. §§ 9601 9675,[1] (CERCLA), but the district court held the Railroads and Shell liable for only a minor portion of the total cleanup costs. B&B was defunct by that time, and so could not contribute to the cleanup costs. The agencies were thus left holding the bag for a great deal of money.

Seeking to hold the Railroads and Shell jointly and severally liable for the entire judgment, the agencies appeal. Shell cross-appeals, claiming that it was not an "arranger" under CERCLA, § 9607(a)(3), and therefore is not a party on whom any cleanup liability can be imposed. We reverse the portion of the judgment that declined to impose full joint and several

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[1]Unless otherwise noted, all statutory citations are to Title 42 and the 2000 edition of the U.S. Code.

liability on the Railroads and Shell and affirm the portion of the judgment that imposed liability on Shell as an arranger.[2]

I. Background

Beginning in 1960, B&B operated an agricultural chemical storage and distribution facility in Arvin, California on a 3.8-acre parcel of land (the B&B parcel). In 1975, B&B's agricultural chemical distribution business outgrew that parcel, and B&B began leasing a 0.9-acre parcel of land adjacent to its own parcel. The 0.9-acre parcel (the Railroad parcel) was jointly owned by the Railroads — Atchison, Topeka & Santa Fe Railroad Co., the predecessor in interest to Burlington Northern & Santa Fe Railway Co., and Southern Pacific Transportation Co., the predecessor in interest to Union Pacific Transportation Co. B&B used the Railroad parcel principally to park fertilizer rigs.

The Railroad parcel comprised the western portion of the Arvin site.[3] Directly to the east of the Railroad parcel sat B&B's warehouse. The Railroad parcel, like the rest of the Arvin site, was graded toward a drainage pond on the B&B parcel.

B&B used the Railroad parcel as an integral part of its overall agricultural chemical facility. From its facility B&B sold local growers agricultural chemical products produced by various manufacturers. In particular, B&B purchased, received delivery of, stored on the Arvin site, and distributed two Shell-produced agricultural chemicals: the soil fumigants

[2]The Railroads have requested judicial notice of the EPA proceedings concerning their suit for reimbursement from the government and of the stay of those proceedings pending the determination of joint and several liability in this case. These proceedings do not " 'have a direct relation to matters at issue.' " *United States ex rel. Robinson Rancheria Citizens Council v. Borneo, Inc.*, 971 F.2d 244, 248 (9th Cir. 1992) (citation omitted). We therefore deny the Railroads' request for judicial notice.

[3]We refer to the B&B and Railroad parcels together as the "Arvin site."

D-D and Nemagon. D-D and Nemagon — members of a class of chemicals called nematocides — are designed to kill nematodes, microscopic worms that attack the roots of crops. Nematocides work by penetrating the soil and then dispersing. B&B also stored on the Arvin site dinitro (dinoseb) weed killer, purchased from Dow Chemical Company.

During the 1960s and 1970s, Shell strongly encouraged its customers, including B&B, to purchase D-D in bulk, a policy requiring customers to maintain large storage tanks. Shell delivered the bulk D-D to B&B "FOB Destination" via common carrier trucks.[4] When the trucks carrying D-D arrived at the Arvin facility, the contents of the trucks were transferred to B&B's large tanks by hoses. The process was quite messy, with frequent spills.

To apply D-D to growers' fields, B&B used rigs loaded with the chemical. The rigs were stored on the Railroad parcel, as were bulk containers of dinoseb and, occasionally, empty fertilizer cans. Chemicals also reached the Railroad parcel through water flow from the B&B parcel.

In 1978, after a windstorm destroyed the bulk D-D storage tank used to store Shell D-D, B&B began using converted stainless steel milk trailers to store the bulk D-D. The chemical, which is highly corrosive and eats through steel, can cause leakage in steel tanks only a few years old. B&B kept these leak-prone tanks all over the Arvin facility, including on the Railroad parcel.

D-D, when it leaks, evaporates quickly if exposed to air but is highly soluble in water. When D-D infiltrates the ground, it moves through the soil by molecular diffusion, dispersing

[4]"FOB Destination" means "free on board" and "when the term is F.O.B. the place of destination, the seller must at his own expense and risk transport the goods to that place and there tender delivery of them." U.C.C. § 2-319(1)(b) (2003).

in all directions. A slight pull from gravity, however, makes the chemical a bit more likely to flow downward into groundwater than laterally through the soil. Dinoseb, similarly, tends to move to the groundwater table if there is water movement in that direction. No toxic chemicals can reach the groundwater level currently used as a source of drinking water because of an impermeable layer of soil. The next highest level, however, is a potential source of drinking water, and contamination can reach that level.

After more than twenty years of leakage and dissemination of hazardous materials, the DTSC in 1983 found B&B in violation of several hazardous waste laws. The EPA investigated separately and found evidence of substantial soil and groundwater contamination at B&B's Arvin facility. The EPA and DTSC (the Governments) began to remedy the contamination pursuant to their cleanup authority under CERCLA, incurring substantial remediation costs. In 1991, the EPA ordered the Railroads to take specific preventative steps on the Railroad parcel, including installing groundwater monitoring wells. None of the contamination requiring immediate remediation was on the Railroad parcel.

In 1992, the Railroads filed an action against B&B and certain of its principals for contribution for costs incurred in the EPA-ordered cleanup. Four years later, the Governments each filed CERCLA actions against B&B, the Railroads, and Shell for reimbursement of their investigation and cleanup costs.[5] The district court consolidated the three cases and, after a twenty-seven day bench trial, issued an exceedingly detailed 185-page Findings of Fact and Conclusions of Law, thereafter slightly amended.[6]

[5]The relevant statutory sections covering contribution and reimbursement actions, § 9613(f) and § 9607, are quoted later in this opinion.

[6]Quotations from and discussion of the district court's ruling in this opinion concern the district court's Amended Findings of Fact and Conclusions of Law unless otherwise noted.

The district court found the Railroads liable as owners of the Arvin facility and as persons who "at the time of disposal of any hazardous substance owned or operated any facility at which such hazardous substances were disposed of. § 9607(a)(1), (2). Shell was held liable as a "person who . . . arranged for disposal . . . of hazardous substances." § 9607(a)(3). Turning to whether the Railroads and Shell were liable for all or only a portion of the cleanup costs, the district court found that the harm to the Arvin site was capable of apportionment and proceeded to apportion it. The Railroads and Shell had, by acknowledging no liability at all, taken what the district court termed a " 'scorched earth,' all-or-nothing approach to liability," and so provided little assistance on the apportionment issue. The district court nonetheless proceeded to "perform the equitable apportionment analysis demanded by the circumstances of the case."

For the Railroads, the court multiplied three proportions: (1) the percentage of the overall site that was owned by the Railroads, 19.1%;[7] (2) the percentage of time that the Railroads leased the parcel in relation to B&B's total operations, 45%;[8] and (3) the fraction of hazardous products attributable to the Railroad parcel, 66%.[9] This calculation resulted in a determination of 6% liability. Then, to account for any "calculation errors," the district court assumed 50% error and raised the Railroads' proportion of the total liability to 9%.

[7] *0.9* acres ÷ *4.7* acres = *0.191* (19.1%).

[8] B&B began operations in 1960. The Railroad parcel was leased starting in 1975. In 1988, B&B ceased its operations at Arvin. Thus, the Railroad parcel was part of the Arvin site for 13 of 29 years, or 45% of the time B&B operated the facility.

[9] There were three pertinent chemicals: D-D, Nemagon, and dinoseb. The district court found that although there was some D-D contamination attributable to the Railroad parcel, that "slight contamination is offset by the fact that the [Arvin] Site is graded towards the southeast pond [on the B&B parcel] and the levels of chemical contamination on the B&B parcel are substantially higher than the reported detections on the Railroad parcel." On that reasoning, the district court removed all D-D from the equation.

For Shell, the district court approximated the percentages of leakage from various activities attributable to Shell and multiplied them together to set Shell's proportion of the total liability at 6%.[10] Shell was also assigned, in the contribution action, 6% of the costs incurred by the Railroads in their cleanup effort.[11]

DTSC and the EPA timely appealed the district court's judgment. Shell timely cross-appealed the finding that it was liable as an "arranger" under CERCLA.

II. Standards of Liability Under CERCLA

[1] CERCLA was enacted in 1980 to provide for effective responses to health and environmental threats posed by hazardous waste sites. *See generally Mardan Corp. v. C.G.C. Music, Ltd.*, 804 F.2d 1454, 1455 (9th Cir. 1986). Under CERCLA, state and federal governments can first begin the cleanup of toxic areas, *see* § 9604(a)-(d), and then sue potentially responsible parties (PRPs) for reimbursement, *see* § 9607(a). A key purpose of this scheme is "shift[ing] the cost of cleaning up environmental harm from the taxpayers to the parties who benefitted from the disposal of the wastes that caused the harm." *EPA v. Sequa Corp. (In the Matter of Bell Petroleum Servs., Inc.)*, 3 F.3d 889, 897 (5th Cir. 1993) (citing *United States v. Chem-Dyne Corp.*, 572 F. Supp. 802, 805-06 (S.D. Ohio 1983)).

[2] In accord with this purpose, CERCLA is a "super-strict" liability statute. Under its provisions, parties can be liable for cleaning up toxic chemicals if they fit into one or more of the four PRP categories set out in § 9607(a):

[10]B&B, albeit insolvent, was assigned 100% joint and several liability.

[11]The Railroads do not challenge the percentage of liability assigned to Shell.

> (1) the owner and operator of . . . a facility,
>
> (2) any person who at the time of disposal of any hazardous substance owned or operated any facility at which such hazardous substances were disposed of,
>
> (3) any person who by contract, agreement, or otherwise arranged for disposal or treatment, or arranged with a transporter for transport for disposal or treatment, of hazardous substances owned or possessed by such person . . . , and
>
> (4) any person who accepts or accepted any hazardous substances for transport to disposal or treatment facilities . . . .

A "facility" is defined in § 9601(9)(B) as "any site or area where a hazardous substance has been deposited, stored, disposed of, or placed, or otherwise come to be located; but does not include any consumer product in consumer use or any vessel."[12] The statute's basic liability provision, in turn, provides that "subject only to the defenses set forth in subsection (b) of this section [PRPs shall be liable for] — (A) all costs of removal or remedial action incurred by the United States Government or a State or an Indian tribe not inconsistent with the national contingency plan . . . ." § 9607(a). Thus, PRPs can be responsible for the costs of cleaning up hazardous waste sites without any finding that they were negligent *or* that they caused the contamination, unless they can make out the third-party defense set out in § 9607(b)(3).[13]

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[12]The district court found that the entire Arvin site, including the Railroad parcel, was a single facility for the purposes of § 9607. The Railroads do not appeal that finding.

[13]Section 9607(b) reads:

> There shall be no liability under subsection (a) of this section for a person otherwise liable who can establish by a preponder-

A. Validity of Apportionment

[3] CERCLA does not address the question whether, as between PRPs who are liable for cleanup costs, liability is *joint and several* — meaning that each PRP responsible for all cleanup costs at a facility is liable for such costs — or *severable* — meaning that cleanup costs at a single facility can be apportioned among PRPs on some basis.

In this circuit, liability is joint and several when the harm is indivisible. *Fireman's Fund Ins. Co. v. City of Lodi*, 302 F.3d 928, 945 (9th Cir. 2002); *see also Carson Harbor Vill., Ltd. v. Unocal Corp.*, 270 F.3d 863, 871 (9th Cir. 2001) (en banc). Thus, a defendant "may be held fully liable for the entire clean-up costs at a site despite the fact that the defendant PRP was in fact responsible for only a fraction of the contamination." *Fireman's Fund*, 302 F.3d at 945.

We have also referred in general terms to the possibility of

> ance of the evidence that the release or threat of release of a hazardous substance and the damages resulting therefrom *were caused solely by*—
>
> . . .
>
> (3) an act or omission of a third party other than an employee or agent of the defendant, or than one whose act or omission occurs in connection with a contractual relationship, existing directly or indirectly, with the defendant (except where the sole contractual arrangement arises from a published tariff and acceptance for carriage by a common carrier by rail), if the defendant establishes by a preponderance of the evidence that (a) he exercised due care with respect to the hazardous substance concerned, taking into consideration the characteristics of such hazardous substance, in light of all relevant facts and circumstances, and (b) he took precautions against foreseeable acts or omissions of any such third party and the consequences that could foreseeably result from such acts or omissions.

(Emphasis added). Section 9607(b) also provides defenses for "an act of God" and "an act of war." § 9607(b)(1), (2).

apportioning liability. *See id.* (noting the use of "federal common law principles" of apportionment); *Carson Harbor Vill.*, 270 F.3d at 871 (stating that once liability has been found, "the defendant may avoid joint and several liability by establishing that it caused only a divisible portion of the harm"). Yet, in none of our cases has there been an actual dispute regarding whether liability should be apportioned among the liable PRPs.[14] This case squarely presents that question. To determine whether the district court was correct to apportion liability in this case, we thus must address, initially, the general propriety of severability.[15] In line with every circuit that has addressed the issue, we hold that apportionment is available at the liability stage.

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[14]The major cases addressing division of PRP liability under CERCLA in the Ninth Circuit instead have been contribution cases among PRPs, decided after joint liability was established, *see, e.g.*, *Carson Harbor Vill.*, 270 F.3d at 871; *Pinal Creek Group v. Newmont Mining Corp.*, 118 F.3d 1298, 1301 (9th Cir. 1997), or have addressed a different issue entirely, *see, e.g.*, *Fireman's Fund*, 302 F.3d at 945 (analyzing the possibility that CERCLA preempts state laws).

[15]DTSC argues that the apportionment question is not properly before us because it was not properly raised in the pretrial order, but we do not agree. To preserve a claim, a party must put forward a position in the pretrial statement in a manner sufficient to put the opposing party on notice and allow the trial court to consider its merits. *See Cripe v. City of San Jose*, 261 F.3d 877, 886 n.9 (9th Cir. 2001) (refusing to hold that defendants had waived an affirmative defense by mislabeling it, because the court and plaintiffs were on notice of the real issue); *Arizona v. Components Inc.*, 66 F.3d 213, 217 (9th Cir. 1995) (noting that argument must be raised sufficiently for the court to rule on it). Notice to the district court is not an issue in this case, as the final decision addresses apportionment. While the Governments claim to have been unaware that they needed to address the apportionment issue, their assertion is not supported by the record. Both the Railroads and Shell directly addressed the apportionment issue in their pretrial orders. The Railroads "den[ied] that they are jointly and severally liable for the response costs claimed by the Government" but argued that, if liable, they should only be responsible for that fraction of the total mass of groundwater contamination proven to be traceable to their parcel. Shell noted that joint and several liability is not mandatory and cited cases regarding apportionment. As a result, we conclude that the issue of apportioning liability was not waived and is properly before us.

In so ruling we rely, as have the other circuits that have analyzed the issue, on a seminal case decided in 1983 in the Southern District of Ohio, *Chem-Dyne*. After reviewing the evolution of the statute, *Chem-Dyne* concluded that liability under § 9607(a) may be joint and several even though the statute does not expressly so provide. *Chem-Dyne*, 572 F. Supp. at 810. Suggesting that Congress intended to leave the matter to the usual common law rules, adjusted to CERCLA as necessary, *Chem-Dyne* held that courts should look to the Restatement (Second) of Torts, as well as to other indications of federal common law, for the principles of joint and several liability applicable under CERCLA. *See id.* at 809-10. Later, circuit court cases endorsed this approach. *See Chem-Nuclear Sys., Inc. v. Bush*, 292 F.3d 254, 259-60 (D.C. Cir. 2002); *United States v. Hercules, Inc.*, 247 F.3d 706, 717 (8th Cir. 2001); *United States v. Township of Brighton*, 153 F.3d 307, 318 (6th Cir. 1998); *Bell Petroleum*, 3 F.3d at 895-96; *United States v. Alcan Aluminum Corp. (Alcan-PAS)*, 990 F.2d 711, 721-22 (2d Cir. 1993); *United States v. Alcan Aluminum Corp. (Alcan-Butler)*, 964 F.2d 252, 268-69 (3d Cir. 1992); *United States v. Monsanto Co.*, 858 F.2d 160, 171-72 (4th Cir. 1988).

[4] As *Chem-Dyne* persuasively recounts, the history of § 107(a) of CERCLA, 42 U.S.C. § 9607(a), indicates that although Congress declined to mandate joint and several liability, it did not intend by doing so "a rejection of joint and severable liability." *Chem-Dyne*, 572 F. Supp. at 808. Instead, recognizing the difficulties inherent " 'in prescribing in statutory terms liability standards which will be applicable in individual cases,' " *id.* at 806 (quoting 126 CONG. REC. S14964 (Nov. 24, 1980) (remarks of Sen. Randolph)), Congress meant "to have the scope of liability determined under common law principles, where a court performing a case by case evaluation of the complex factual scenarios associated . . . will assess the propriety of applying joint and several liability on an individual basis," *id.* at 808. We agree with this account of Con-

gress's intent and hold that apportionment can be appropriate under CERCLA.

B. Standards for Apportionment

Because we hold that apportionment is available at the liability stage in CERCLA cases, we must determine the appropriate standards for determining when apportionment is available and, when it is, how to ascertain the proper division of damages among defendants. Again, we draw on the experience of our sister circuits.

[5] The circuits that have addressed these questions have looked to common law principles of tort in general, and the Restatement in particular, for guidance as to when and how to impose joint and several liability under § 9607(a). We agree that this approach is proper and adopt it here. We also follow *Chem-Dyne* and all of the courts of appeals that have addressed the question in holding that the resulting standard must be a uniform federal rule. *See, e.g., Aviall Servs., Inc. v. Cooper Indus., Inc.*, 312 F.3d 677, 684 (5th Cir. 2002) (holding that apportionment of CERCLA liability "is . . . a matter of federal common law"), *reversed on other grounds by* 543 U.S. 157 (2004); *United States v. Burlington N. R. Co.*, 200 F.3d 679, 697 (10th Cir. 1999) (same); *Township of Brighton*, 153 F.3d at 329 (same); *Monsanto Co.*, 858 F.2d at 172 (same). As *Chem-Dyne* noted, the legislative history of CERCLA supports such an approach, as does its policy favoring national uniformity so as to discourage "illegal dumping in states with lax liability laws." *Chem-Dyne*, 572 F. Supp. at 809.[16]

[16]The parties here have assumed that the apportionment standard must be one of uniform federal common law. As stated above, every federal circuit to address the issue, including those decided after *O'Melveny & Myers v. FDIC*, 512 U.S. 79 (1994), and *Atherton v. FDIC*, 519 U.S. 213 (1997), has shared that understanding. Although *Atchison, Topeka & Santa Fe Ry. Co. v. Brown & Bryant, Inc.*, 159 F.3d 358, 362-64 (9th Cir. 1997), questioned whether *O'Melveny & Myers* and *Atherton* upset Ninth

[6] The question, then, is what the uniform federal law should be. Once again, all the circuits that have addressed this question have followed *Chem-Dyne*, holding that the appropriate source for a common law rule of apportionment is Section 433A of the Restatement of Torts. *See Hercules*, 247 F.3d at 716 & n.9, 717 (noting that courts support the divisibility doctrine as borrowed from the Restatement); *Bell Petroleum*, 3 F.3d at 895 (relying on the Restatement); *Chem-Dyne*, 572 F. Supp. at 810 (establishing this method). We concur in this conclusion generally, although we borrow from the Restatement with two important caveats, as there are two areas where the Restatement approach is a somewhat poor fit and requires slight modifications to ensure that our approach comports with the liability and remediation scheme of CERCLA. *First*, there are important distinctions between causation as conceived in the Restatement and causation in the context of CERCLA. We describe these and import a nexus concept that relates to the particular PRP provisions at issue. And *second*, the concept of "harm" in the Restatement as actual injury does not correspond easily to CERCLA's priorities. We conclude instead that contamination and the cost of remediation are both relevant for the "harm" analysis under CERCLA. The Restatement's fundamental reliance on objective rather than equitable considerations, however, does comport well with the "super-strict" nature of CERCLA and with the development of the statute, leaving us to conclude that equitable considerations have no role at this stage in the applicable standards.

Circuit law with regard to the adoption of uniform federal common law regarding successor liability under CERCLA, very different considerations govern with respect to apportionment. In *Atchinson*, resolution of the question of successor liability would resolve *who* was liable under CERLA, an inquiry with roots in state corporate law. Here, the inquiry diverges from state law completely. As we explain in this section, the "super-strict" nature of CERCLA liability is *sui generis*, so there is no state law directly applicable. The resulting apportionment analysis therefore requires a similarly unique set of considerations, married to the statute's functions and purpose.

1. Causation

[7] Section 433A of the Restatement allows for apportionment of damages where "(a) there are distinct harms,[17] or (b) there is a reasonable basis for determining the *contribution of each cause* to a single harm."[18] RESTATEMENT (SECOND) OF TORTS § 433A(1) (1965) (emphasis added). CERCLA, however, does not require causation as a prerequisite to liability (except with regard to the third-party defense, *see* § 9607(b), not at issue here). Nonetheless, most of the leading cases on joint and several liability under CERCLA have addressed divisibility under § 433A(1)(b) and thereby incorporated a modified concept of causation.[19] *See, e.g.*, *Bell Petroleum*, 3

[17]Comment b of section 433A notes:

> *Distinct harms.* There are other results which, by their nature, are more capable of apportionment. If two defendants independently shoot the plaintiff at the same time, and one wounds him in the arm and the other in the leg, the ultimate result may be a badly damaged plaintiff in the hospital, but it is still possible, as a logical, reasonable, and practical matter, to regard the two wounds as separate injuries, and as distinct wrongs. The mere coincidence in time does not make the two wounds a single harm, or the conduct of the two defendants one tort. There may be difficulty in the apportionment of some elements of damages, such as the pain and suffering resulting from the two wounds, or the medical expenses, but this does not mean that one defendant must be liable for the distinct harm inflicted by the other.

[18]Comment d of section 433A notes:

> *Divisible harm.* There are other kinds of harm which, while not so clearly marked out as severable into distinct parts, are still capable of division upon a reasonable and rational basis, and of fair apportionment among the causes responsible. Thus where the cattle of two or more owners trespass upon the plaintiff's land and destroy his crop, the aggregate harm is a lost crop, but it may nevertheless be apportioned among the owners of the cattle, on the basis of the number owned by each, and the reasonable assumption that the respective harm done is proportionate to that number. Where such apportionment can be made without injustice to any of the parties, the court may require it to be made.

[19]The sections of the Restatement that courts have used to establish the rules of joint and several liability under CERCLA are found in the negli-

F.3d at 902-03; *Monsanto*, 858 F.2d at 172; *Chem-Dyne*, 572 F. Supp. at 810.

Notably, these cases often dealt with simpler facts than those we confront. *Chem-Dyne*, for instance, assumed a case quite different from this one. There, the court stated that "[t]ypically . . . there will be numerous hazardous substance generators or transporters who have disposed of wastes at a particular site." 572 F. Supp. at 810. It was in that context — that is, where the question was apportionment among defendants who all disposed of wastes themselves — that *Chem-Dyne* determined that courts could follow the divisibility principles of the Restatement and remain true to CERCLA. In a situation in which the several defendants are all polluters themselves, divisibility under the Restatement standard is indeed a relatively straightforward analysis, and one in which causation concepts are useful. If the court can estimate with some confidence the amount of waste that each defendant disposed of and has a basis for determining that the extent of contamination of the site is proportional to the amount of waste disposed of, then the Restatement approach to apportionment works nicely.

The situation here is different.[20] The three "responsible"

gence division of the Restatement. As these courts recognize, CERCLA is a strict liability statute. *See, e.g.*, *Hercules*, 247 F.3d at 716; *Township of Brighton*, 153 F.3d at 318. Because there is no comparable divisibility rule in the strict liability portion of the Second Restatement, courts have adapted the negligence rules to strict liability by declining to rely on the portion of the Restatement section that places an initial burden as to causation on the plaintiff. *Compare Hercules*, 247 F.3d at 717, *and Bell Petroleum*, 3 F.3d at 896, *with* RESTATEMENT (SECOND) OF TORTS § 433B(1).

[20]One commentator has noted that trying to apply the Restatement to CERCLA in most cases is like "pushing a round peg through a square hole. Traditional tort law principles falter in the CERCLA context because CERCLA is so unlike a typical tort law cause of action." Lynda J. Oswald, *New Directions in Joint and Several Liability Under CERCLA?*, 28 U.C. DAVIS L. REV. 299, 360 (1995).

parties are: the now-insolvent majority owner and operator of the site; the mostly absentee landlord of a portion of the site; and a seller of chemicals shipped to and stored at the site. Each party had an entirely different role in the contamination process, with overlapping effects, and not all "caused" contamination in any meaningful sense.

[8] Most notably, PRP status premised on ownership of a facility does not require *any* involvement in the disposal of hazardous substances. Thus, to speak of a PRP "causing" contamination of its land simply by owning land on which someone else disposes of hazardous wastes is to indulge in metaphor. At the same time, to allow CERCLA defendants, especially landowner PRPs, to prove through traditional causation analysis that they were *not* entirely liable would be to undermine the premise on which the statute designated them as PRPs to begin with. CERCLA requires a *connection* — for example, that the PRP be a landowner "at the time of disposal," *see* § 9607(a)(2) — but no further *causation*. We therefore adjust the application of the Restatement principles to the current circumstance by abjuring the traditional "causation" principles and substituting a nexus concept that depends upon the particular PRP provision applicable. Where, as here, the pertinent PRP status is as landowner, the landowner can establish divisibility only by demonstrating that portions of the contamination are in no respect traceable to the portion of the facility that the landowner owned at the time of the disposal. The arranger nexus is more straightforward, with a focus not on ownership of the facility but rather on the relevant, arranged disposals in light of other contamination at the facility.

2. Harm

[9] A second difficulty that results from relying on tort principles in a scheme not based on tort law concerns the application of the term "harm," used in the Restatement, as applied to CERCLA. *See* RESTATEMENT (SECOND) OF TORTS

§ 433A. The CERCLA cost recovery section does not focus on "harm," but rather on "costs of removal or remedial action" and "necessary costs of response."[21] § 9607(a). Thus, when applying the Restatement in the context of CERCLA, the question becomes: What is the "harm" that we are attempting to divide?

There are three possible kinds of "harm" in actions for remediation costs under CERCLA: the initial disposal, the resulting contamination, and the costs of remediating the contamination. Actual injury to individuals or to property, the usual "harms" in a tort suit, are *not* a pertinent consideration; the statute is concerned with averting future injury by remediating contamination, not with compensation for past injuries.

If the harm were the *disposal*, then divisibility based on volume of discharge by operators or by parcel would always make sense, because disposal occurs in specific amounts at specific places. If the harm were *contamination*, then some attempt would have to be made either to justify a direct correlation between disposal and contamination under the specific circumstances or to separate out the leakage that remained as contamination from leakage that either evaporated, was adequately diluted, or for other reasons did not remain on the property in toxic form.[22] If the harm is the *cost of remediation*, then divisibility would have to be based on the pro rata cost of cleaning up each defendant's contribution to the contami-

[21]The statute also mentions "damages for injury to, destruction of, or loss of natural resources" and "costs of any health assessment or health effects study." § 9607(a)(C), (D). These provisions may be informative with regard to the nature of the harm in other cases but are not here applicable.

[22]In many instances, of course — as in *Chem-Dyne* — the various polluters will dispose of the same substance in the same location, so there will be a basis for assuming that each polluter's pro rata share of the hazardous waste disposed of and of the resulting contamination is the same. *See also Bell Petroleum*, 3 F.3d at 903.

nation. That pro rata cost will sometimes differ from the proportion of contamination caused by each defendant, because the cost of removing contamination can vary with geographical considerations, degree of toxicity, the means of extraction used for different toxic substances, or other factors.

[10] In light of a CERCLA liability suit's central purpose — recovering the cost of eradicating contamination — we conclude that it is most useful for purposes of determining divisibility to view the "harm" under CERCLA as the contamination traceable to each defendant. Disposal itself is not the focus of the statute, unless it results in contamination. And the cost of cleaning up the contamination is most analogous to the damages recovered in a tort suit, not to the injury on which liability is based.[23]

3. Equity

[11] Because this case is one in which the harms are not distinct, apportionment must be under Restatement § 433A(1)(b) if it is to be allowed at all. That is, there must be a reasonable basis for determining the contribution of each PRP to the harm. While nothing in the statute directly addresses the question whether equitable factors are appropriate for purposes of apportioning liability among joint tortfeasors, all the other circuits that have addressed the issue have held that they are not. We again follow their lead.

Although CERCLA is not explicit on this issue, there is a statutory provision concerning the separate question of contri-

[23]The cost of cleanup of different toxic substances or in different areas of the facility will often be a useful measure of the proportion of the *pertinent* contamination allocable to each defendant. That cost will depend upon factors such as which contamination was serious enough to merit remediation and how thoroughly the soil was contaminated in various areas. Thus, the "harm" allocation analysis may in some instances usefully focus initially on the proportion of costs associated with remedying various aspects of the contamination.

bution actions among PRPs once liability to the plaintiffs seeking to recover cleanup costs has been determined. That provision, § 9613(f), added to CERCLA in 1986, is silent as to initial divisibility. It only describes, quite generally, the considerations applicable in a contribution action for determining whether one PRP can collect from another a portion of the costs for which it has been held liable: "In resolving contribution claims, the court may allocate response costs among liable parties using such *equitable factors* as the court determines are appropriate." § 9613(f) (emphasis added).[24] In contrast, § 433A(1)(b) of the Restatement and the appended commentary concerning divisibility are silent as to equitable considerations.[25]

Although, as noted, this circuit heretofore has not addressed divisibility analysis, the implication from our cases deciding § 9613(f) contribution issues is that the proper time to focus on such factors is *at the contribution phase*, not the liability phase. *See, e.g.*, *Carson Harbor Vill.*, 270 F.3d at 871 (noting that the "contribution provision aims to avoid a variety of scenarios by which a comparatively innocent PRP might be on the hook for the entirety of a large cleanup bill"); *Pinal Creek*, 118 F.3d at 1301 ("A PRP's contribution liability will corre-

[24]Among the equitable factors used in CERCLA contribution cases are the so-called "Gore factors." *See Hercules*, 247 F.3d at 718. Those factors are derived from the amendment that then-Representative Gore introduced in 1980 to alleviate the harshness of mandatory apportionment, which at that time was a part of the bill. *See* 126 CONG. REC. 26782 (1980) (statement of Rep. Gore). Although these factors are appropriate in contribution cases, they are not, for the reasons suggested in the text, appropriate considerations at the liability stage.

[25]The only mention of equity in Restatement § 433A is in comment h, regarding "[e]xceptional cases." Comment h suggests that in cases of insolvent defendants, when an "innocent plaintiff would be forced to bear the share of the loss due to the defendant from whom he could not collect damages," courts may refuse to allocate harm to avoid "injustice to the plaintiff." Because we determine that there is no reasonable basis for apportioning the defendants' harm, we do not reach the question of whether the considerations of comment h are applicable here.

spond to that party's equitable share of the total liability and will not be joint and several.").

Other circuits have been careful to delineate the difference between the equitable considerations pertinent under § 9613(f) and the objective considerations pertinent under § 9607(a). *See Hercules*, 247 F.3d at 718; *Township of Brighton*, 153 F.3d at 318; *Bell Petroleum*, 3 F.3d at 901. As the Sixth Circuit has noted, divisibility analysis has the potential to eviscerate the strict liability principles of CERCLA entirely, "because defendants who can show that the harm is divisible, and that they are not responsible for any of the harm" could whittle their liability to zero. *Township of Brighton*, 153 F.3d at 318. Additionally, as *Township of Brighton* also noted in rejecting a fairness-based approach, divisibility analysis is not an invitation to "split the difference" and come up with a "compromise amount." *Id.* at 319.

While it may seem unfair to hold a partial owner liable for all the contamination cleanup costs, that perceived unfairness is the result of the statutory "super-strict" liability scheme. Assuring fairness among PRPs is the proper subject of the contribution stage, not of apportionment at the liability stage. *See United States v. Rohm & Haas Co.*, 2 F.3d 1265, 1280-81 (3d Cir. 1993), *overruled on other grounds by United States v. E.I. Dupont de Nemours & Co.*, 432 F.3d 161, 162-63 (3d Cir. 2005) (en banc). At the liability stage, CERCLA simply assigns liability to statutorily responsible parties so as to assure that, as between those with *some* connection to the contamination — and who have, it may be assumed, benefitted from the contamination-causing process — and those with *none*, such as the taxpayers. Any court-created structure that would allow PRPs to whittle their share to little or nothing and leave the taxpayers holding the bag may seem more equitable to some PRPs but would violate the basic structure of the CERCLA statutory scheme. Because of such concerns, courts have generally refrained from using an equity-based

allocation analysis, so as not to weaken further the strict liability principle basic to CERCLA.

[12] We agree that while joint and several liability need not be universally applied, *see Bell Petroleum*, 3 F.3d at 897, the inquiry as to whether such liability is appropriate must focus strictly on whether there is a reasonable basis for apportionment, *see, e.g.*, *id.* at 901-04. Consequently, in an action under § 9607(a), a court is not to look to equitable considerations, such as relative fault, in determining whether liability is to be joint and several or apportioned.

III. Analysis of Railroads' and Shell's CERCLA Liability

We now proceed to apply these fairly straightforward principles to the circumstances of this case. Here, the Railroads were found to be PRPs under § 9607(a)(2), as the owners of a "facility at which . . . hazardous substances were disposed of," and Shell was found to be a PRP under § 9607(a)(3), as a person who "arranged for disposal . . . of hazardous substances owned or possessed by such person." The first question we address is whether the Railroads and Shell are liable for *all* the cleanup costs at the Arvin site, or, as the district court held, only some of them. The second question, addressed later, is whether Shell is liable for *any* of the harm, as an "arranger."

A. Apportionment of Liability

1. Standard of Review and Burden of Proof

Because we have not heretofore faced a CERCLA apportionment issue directly, there is no Ninth Circuit precedent concerning the standard of appellate review for such an issue. Three circuits have addressed the question, and two separate approaches have emerged.

The Fifth and Eighth Circuits look first to whether there is a reasonable basis for apportioning the harm, an inquiry they consider a question of law reviewed de novo. *See Hercules*, 247 F.3d at 718-19; *Bell Petroleum*, 3 F.3d at 896, 902. These two circuits then examine, as a question of fact reviewed under the clearly erroneous standard, precisely how damages are to be divided. *See Hercules*, 247 F.3d at 718 (holding that "actual apportionment" of damages is a question of fact); *Bell Petroleum*, 3 F.3d at 896 (same).

In contrast, the Sixth Circuit considers divisibility as a whole a factual matter of causation, reviewed entirely under the clearly erroneous standard. *Township of Brighton*, 153 F.3d at 318 n.13. This view, however, disregards a distinction between conceptual divisibility and actual allocation that we find both persuasive and useful. The latter inquiry can involve the resolution of credibility issues and of conflicting evidence, while the former ordinarily does not.

We believe the most appropriate approach, and the one we therefore adopt here, is the one adopted in *Hercules* and *Bell Petroleum*, with a refinement suggested by Judge Parker's dissent in *Bell Petroleum*. Judge Parker thought that the majority confused the distinction between the "*legal* burden that the single harm at issue caused is of a type capable of apportionment, and the *factual* burden of proving the amount of harm attributable to a particular party." *Bell Petroleum*, 3 F.3d at 909 (Parker, J., concurring in part and dissenting in part). We are not sure that there was any such confusion. Rather, an aspect of clear error review is the legal determination whether the party with the burden of proof met that burden; if the party did not and the district court nonetheless ruled for it, then the district court clearly erred. *See Lloyd v. Schlag*, 884 F.2d 409, 415 (9th Cir. 1989) (reviewing "whether the district court committed clear error by holding that [plaintiff] had not met his burden of proof"). Thus, although the harm may be *capable* of apportionment, the harm may not actually be *apportionable* in the particular case

as a factual matter, given the evidence produced, because the party advocating apportionment has not come forward with the minimum showing needed to meet its burden of proof as to the proper division of liability.

We therefore proceed as follows: We inquire, *first*, whether the particular harm at issue in the case is theoretically capable of apportionment — i.e., whether it could ever be apportioned or whether it is, by nature, too unified for apportionment. That question is one of law, reviewed de novo. *Cf. Taisho Marine & Fire Ins. Co. v. M/V Sea-Land Endurance*, 815 F.2d 1270, 1274 (9th Cir. 1987). *Second*, we review for clear error whether the defendant submitted evidence sufficient to establish a reasonable basis for the apportionment of liability, taking into account that the burden of proof is on the party seeking allocation, as well as the district court's actual division of liability.

There is no dispute here on the first, purely legal question — whether the harm is capable of apportionment. *See Bell Petroleum*, 3 F.3d at 896; *Chem-Dyne*, 572 F. Supp. at 810. Some of the contamination on the B&B site occurred before the Railroads' parcel became part of the facility, and the original B&B site is distinct from the portion leased from the Railroads. Only some of the toxic substances were stored on the Railroads' parcel, and only some of the water on the facility washed over the Railroads' site. As to Shell, only some of the toxic substances spilled on the facility were sold by the company. The different toxic substances vary in their likelihood to leak and in the manner and speed in which they disseminate in ground water. So, conceptually, the contamination traceable to the Railroads and Shell, with perfect information, would be allocable, as would be the cost of cleaning up that contamination.

The questions, then, are whether the district court clearly erred in finding that the Railroads and Shell established a "reasonable basis" for apportionment, *Bell Petroleum*, 3 F.3d

at 901, and whether, having so found, the district court properly apportioned the harm.

We recognize that the district court at one point stated that the Railroads failed to "meet their burden of proof" as to divisibility. But its overall ruling was necessarily to the contrary, as the court also stated that it "independently found [in the record] a reasonable basis for apportionment in spite of the parties['] presentations." Thus, while the district court rejected both defendants' *theories* as to divisibility, it used record evidence it found persuasive to determine apportionment. Whether the district court was correct in this regard is, as we have noted, part of the review of the factual decision regarding apportionment, discussed hereafter. The burden of proof issue thus melds with the merits of the apportionment issue, rather than barring us from considering it.

2. The Railroads

As we have established, if apportionment is to be allowed under the Restatement approach, there must be a reasonable basis for calculating the connection between the Railroads' PRP status and the relevant harms. Again, the harm we consider is the contamination on the Arvin site. Where, as for the Railroads, the PRPs' responsibility under the statute derives solely from their status as landowner, the PRPs can establish divisibility by demonstrating that discrete portions of the contamination are in no respect traceable to land they owned at the time of the toxic disposal.

Here, the district court's severability analysis — after 191 pages of an amended opinion that included over 80 pages of factual findings — ultimately relied on the simplest of considerations: percentages of land area, time of ownership, and types of hazardous products. Although we do not fault the district court's factfinding — its numbers are mostly correct — its legal conclusion that these three factors alone suffice to

support apportionment cannot stand.[26] We address each factor below to show why.

a. Land Area

The only court of appeals case that has fully addressed divisibility of *landowner* liability takes a relatively strict approach to apportionment on the basis of land area. In *United States v. Rohm and Haas Co.*, 2 F.3d 1265 (3d Cir. 1993), the most analogous CERCLA divisibility case to this one, the Third Circuit held, as do we, that "simply showing that one owns only a portion of the facility in question is [not] sufficient to warrant apportionment." *Id*. at 1280.

Like this case, *Rohm and Haas* concerned a landowner PRP and changes in landownership over time. Although the Third Circuit's divisibility analysis is fairly cursory, its reluctance to apportion landowner liability on the basis of land boundaries is informative. *Rohm and Haas* indicates that the mere percentage of land owned by one PRP relative to the entire facility cannot alone be a basis for apportionment, as it does not provide a minimally reliable basis for tracing the proportion of leakage, contamination, *or* cleanup costs associated with the entire parcel.

Contrary to *Rohm and Haas*, the district court's analysis gave star billing to the percentage of land ownership, even in a unified facility.[27] We agree with *Rohm and Haas* that this

[26]We emphasize that our conclusion does not rest simply on the fact that the district court's calculation of the Railroads' share of liability was, as the court recognized, "rough[ ]." It is neither unusual nor fatal to the validity of the resulting allocation that an apportionment determination includes estimates of contribution to contamination based on extrapolation of record facts, as long as the basis for the extrapolation is explained, is logical, and does not disregard other record facts.

[27]Judge Moore, concurring in the result in *Township of Brighton*, asserted that a court can *never* apportion liability for contamination at a

approach, seemingly straightforward though it is, fails in most circumstances to comport with the "reasonable basis" test, as the facts of this case illustrate.

[13] The Arvin site was a single facility. CERCLA premises landowner liability on ownership of a *facility*, not on ownership of a certain parcel of land that is part of a facility. The operations on the site were dynamic, with fertilizer rigs stored on the Railroad parcel and filled up on the B&B parcel. Empty pesticide cans were stored on the Railroad parcel before they were crushed and disposed of. After the 1978 windstorm, tanks were stored all over the facility, including on the Railroad parcel. A simple calculation of land ownership does not capture any data that reflect this dynamic, unitary operation of the single Arvin facility.

In addition, the synergistic use of different parts of the Arvin site makes division based on percentage of land ownership particularly untenable. The record shows that B&B leased the Railroad parcel to accommodate its expanding operations. The Railroad parcel added an unquantifiable and perhaps exponential amount to B&B's soil contamination. Were the Railroad parcel not part of the facility, there would have been less overall storage capacity. One can assume that a smaller amount of toxic chemicals would have been delivered to, and spilled on, the Arvin site. The fertilizer rigs, for example, were stored almost exclusively on the Railroad parcel. Had that parcel not been available, less fertilizer might have been delivered to — and leaked onto — the Arvin parcel. As these descriptions suggest, nothing in the record supports a conclusion that the leakage of contaminants that ended

single facility on the basis of geography. *Township of Brighton*, 153 F.3d at 331 n.12 (Moore, J., concurring in result). We do not go as far as Judge Moore. We do note, however, that purely geographic apportionment of a single facility is unlikely to be appropriate if operations on the two portions are intertwined to the extent present in this case.

up on the B&B parcel occurred on each parcel in proportion to its size.

[14] Instead, given the circumstances of this case, more pertinent comparisons would be the proportion of the amount of chemicals stored, poured from one container to another, or spilled on each parcel. For example, were adequate records kept, it would be possible to estimate the amount of leakage attributable to activities on the Railroad parcel, how that leakage traveled to and contaminated the soil and groundwater under the Arvin parcel, and the cost of cleaning up that contamination.

[15] But none of this data is in the record. It may well be that such information is, as a practical matter, not available for periods long in the past, when future environmental cleanup was not contemplated. Unlike records concerning the amount of toxic chemicals produced by a given operator of a facility, records that separate out, with any precision, the amount of toxic chemicals stored on one part of a facility as opposed to another would have had little utility to B&B, the operator of the facility, and none to the Railroads, the owners of the parcel. This observation is true in spades for the more directly pertinent data, such as the amount of leakage on the Railroad parcel, the amount of that leakage that flowed onto the B&B parcel, and the amount of that residue that remained as contamination under the B&B parcel when the cleanup began.

[16] So the failure to keep these records is quite understandable. But these practical considerations cannot justify a "meat-axe" approach to the divisibility issue, premised on percentages of land ownership, as a means of adjusting for the difficulties of proving divisibility with precision when PRP status is based on land ownership alone. Such an approach would be tantamount to a disagreement with the imposition of no-fault land ownership liability. Congress, however, created precisely such liability, placing the responsibility to pay for

environmental cleanup on parties, such as the Railroads, that profited from the circumstances giving rise to the contamination so that the taxpayers are not left holding the tab. The risk of lack of adequate information for meaningful division of harm therefore must rest on the responsible parties, even when that information is extremely hard to come by.

b. Period of Ownership

[17] Just as the district court's land area calculations did not correspond to the harms in this case, its simple fraction based on the time that the Railroads owned the land cannot be a basis for apportionment. The fraction it chose assumes constant leakage on the facility as a whole or constant contamination traceable to the facility as a whole for each time period; no evidence suggests that to be the case. Again, if adequate information were available, it would make sense to eliminate the Railroads' liability for the period before B&B leased the Railroad parcel. *See, e.g.*, *Rohm and Haas*, 2 F.3d at 1280. The evidentiary vacuum concerning the amount of contamination traceable to the pre-lease period, however, precludes any such calculation here.

c. Types of Hazardous Products

[18] While many of the district court's calculations were factually correct but legally insufficient, its decision to assign a two-thirds fraction to represent the present types of hazardous products contains a basic factual error. All three chemicals were on the Railroad parcel at some time. There is no evidence as to which chemicals spilled on the parcel, where on the parcel they spilled, or when they spilled. Yet, there *is* evidence that there may well have been leakage on the Railroad parcel of D-D, the chemical the district court excluded in its calculations. Given the record, the district court clearly erred in its attempt to rely on the proportion of hazardous products present on the Railroad parcel.

d. Conclusion

It will often be the case that a landowner PRP will not be able to prove in any detail the degree of contamination traceable to activities on its land. A landowner PRP need not be involved at all in the disposal of hazardous chemicals and so will often have no information concerning that disposal or its impact. The net result of our approach to apportionment of liability, consequently, may be that landowner PRPs, who typically have the least direct involvement in generating the contamination, will be the least able to prove divisibility. And contribution "is not a complete panacea since it frequently will be difficult for defendants to locate a sufficient number of additional, solvent parties." *O'Neil v. Picillo*, 883 F.2d 176, 179 (1st Cir. 1989).

While the result may appear to fault a landowner PRP for failing to keep records proving the minor connection of its land to the contamination on the facility as a whole, CERCLA is not a statute concerned with allocation of fault. Instead, CERCLA seeks to distribute economic burdens. Joint and several liability, even for PRPs with a minor connection to the contaminated facility, is the norm, designed to assure, as far as possible, that *some* entity with connection to the contamination picks up the tab. Apportionment is the exception, available only in those circumstances in which adequate records *were* kept and the harm *is* meaningfully divisible.

[19] In sum, although most of the numbers the district court used were sufficiently exact, they bore insufficient logical connection to the pertinent question: What part of the contaminants found on the Arvin parcel were attributable to the presence of toxic substances or to activities on the Railroad parcel? We therefore reject the district court's apportionment calculation and hold that the Railroads have failed to prove any reasonable basis for apportioning liability for the costs of remediation.

3. Shell

Shell's contribution to the contamination of the Arvin site is easier to isolate than that of the Railroads', as it involved ascertainable pollutants entering the soil in a specific way. Shell thus had a greater prospect of succeeding on divisibility than did the Railroads, as there is *some* volumetric basis for comparing its contribution to the total volume of contamination on the Arvin site.

Nonetheless, the evidence actually produced was insufficient to allow even a rough approximation of the contamination remaining on the facility, either directly or through the presumption that the pro rata cost of remediating contamination is likely to be equivalent to a PRP's pro rata share of contamination. Indeed, Shell produced only evidence concerning leakage.

[20] Such leakage or disposal evidence cannot suffice in the present circumstances as a basis for apportioning the harm in question. As we have explained, *contamination* — as distinct from leakage — is the necessary consideration. Where there is disposal of multiple contaminants, courts have demanded a "showing [of] a relationship between waste volume, the release of hazardous substances, and the harm at the site." *Monsanto*, 858 F.2d at 172. Factors such as "relative toxicity, migratory potential, and synergistic capacity of the hazardous substances" are relevant to demonstrating this relationship. *Id.* at 172 n.26. Alternatively, volumetric calculations of *contaminating* chemicals — those *remaining* in the environment and requiring cleanup — *could be* sufficiently specific for apportionment. *See Hercules*, 247 F.3d at 719; *Bell Petroleum*, 3 F.3d at 903. But Shell provided no evidence regarding such factors. It thus failed to prove whether its leaked chemicals contaminated the soil in any specific proportion as compared to other chemicals spilled at the site. *See United States v. Agway, Inc.*, 193 F. Supp. 2d 545, 549 (N.D.N.Y. 2002) (noting that defendants whose products have

become commingled in the soil "face an uphill battle in attempting to demonstrate that volumetric contribution is a reasonable basis for apportioning liability of a single harm").

To fill these evidentiary gaps, the district court assumed equal contamination and cleanup cost from all the chemicals' leakage. This methodology entirely failed to account for the possibility that leakage of one chemical might contribute to more contamination than leakage of another, because of their specific physical properties. Similarly, the cost of cleanup depends upon which contaminants are present; some contaminants are more expensive than others to extract from the soil.

Moreover, even as an approximation of *leakage*, the district court's calculations were too speculative to support apportionment. *Chem-Nuclear* is informative in this regard. In *Chem-Nuclear*, the defendant disposed of drums of hazardous waste at several facilities. 292 F.3d at 255. At least eighty drums found at a single site were attributable to the defendant. *Id*. The defendant could not prove, however, that it was responsible only for those eighty drums, and therefore was not entitled to apportionment. *Id.* at 259-61. Although the defendant provided evidence supporting inferences regarding where its drums went, the court refused to accept these inferences as sufficient proof. *Id.* at 260.

Here, the court estimated the volume of Shell's chemicals that leaked from each transfer based on data samples that do not readily extrapolate to total leakage over the entire twenty-three-year period that Shell supplied B&B with D-D. The court used figures from only six years of B&B's purchases of Shell D-D to calculate the average D-D transferred at the Arvin site each year, yet provided no basis for assuming equal purchases each year. The court then based its estimate of the amount of D-D spilled during each transfer on guesses by witnesses.[28] Also, although D-D was known to leak when sight

[28]For the quantity of D-D that spilled during transfer from Shell's carriers' trucks to the D-D rigs, for example, the court relied on estimates of witnesses that the spill was between a cup and a quart. It then calculated "3 cups x 23 years = 2,691 cups => 168 gallons of D-D."

gauges on D-D rigs broke, the court had no evidence of how much D-D leaked under these circumstances and, therefore, did not add any quantity for sight gauge leakage into the calculation. Even if each of these estimates alone might have been reasonable, the resulting combined estimate is too speculative to serve as an accurate basis for ascertaining leakage, let alone contamination or the costs of cleaning up the contamination.[29]

Again, Shell's harm was *capable* of apportionment. Shell could have provided data showing the volume of chemicals shipped to B&B every year, or more precise estimates of the average volume of leaked chemicals during the transfer process. Data connecting the properties of the various chemicals leaked at the site to the likelihood that they contributed to the contamination could have been presented and considered. But the record before us provides none of that information, most likely because Shell put its eggs in the no-liability basket.

[29]There is something of a circuit split on the degree of specificity of proof necessary to establish the amount of liability apportioned to each PRP. According to some courts, proving up the precise proportion attributable to each PRP is a "very difficult proposition," *Control Data Corp. v. S.C.S.C. Corp.*, 53 F.3d 930, 934 n.4 (8th Cir. 1995), requiring "concrete and specific" evidence in support of any proposed apportionment, *Hercules*, 247 F.3d at 718. The defendant cannot rely on a "chain of possible inferences." *Chem-Nuclear*, 292 F.3d at 260. In contrast, other courts have permitted informal estimates or data rather than more exact calculations. *See Bell Petroleum*, 3 F.3d at 903-04 (allowing estimation of the proportion of contamination produced by each of a series of successive operators of a facility, where reliable approximations were simple because there was a single chemical produced by the successive operators each of whom operated the facility similarly); *see also Hercules*, 247 F.3d at 719 (relying on *Bell Petroleum*, 3 F.3d at 895-96, and holding that the defendant need not show that there was no possibility that it contributed to the harm, because certain approximations can suffice). Aside from noting, as we have, *supra* n.27, that logical, supportable inferences from the record facts are, as always, permissible, we need not weigh in on this dispute, as the district court's extrapolations could not be upheld under even a forgiving standard.

[21] In the end, the district court's apportionment analysis with regard to Shell came closer to meeting the legal standard than the method it used with respect to the Railroads. We hold, nonetheless, that on the facts of this case as the district court found them, there was no reasonable basis for apportioning the pertinent harm caused by Shell.

B. "Arranger" Liability

[22] Under CERCLA, "any person who by contract, agreement, or otherwise arranged for disposal or treatment, or arranged with a transporter for transport for disposal or treatment, of hazardous substances owned or possessed by such person" is liable. § 9607(a)(3). Shell claims that (1) the district court applied the wrong legal standard in determining whether Shell was an "arranger" under § 9607(a); (2) the "useful product" doctrine precludes imposition of "arranger" liability on Shell; (3) Shell lacked ownership and control over the chemicals at the time of the transfers and thus the district court could not find that it had arranged them; and (4) because D-D evaporates or disperses rather than remaining in toxic form in the soil, the district court erred when it determined that Shell contributed to the groundwater contamination. We reject these contentions and affirm the district court's ruling on the "arranger" issue.

We review the district court's interpretation of CERCLA to determine the legal standard for arranger liability as a question of law, reviewed de novo. *Carson Harbor Vill.*, 270 F.3d at 870. We review the district court's factual determinations regarding Shell's operations for clear error. *W. Prop. Serv. Corp. v. Shell Oil Co.*, 358 F.3d 678, 685 (9th Cir. 2004).

1. Requirements for "Arranger" Liability

CERCLA does not define "arrange[ ]." We have avoided giving the term "arranger" too narrow an interpretation to avoid frustrating CERCLA's goal of requiring that companies

responsible for the introduction of hazardous waste into the environment pay for remediation. *Pakootas v. Teck Cominco Metals, Ltd.*, 452 F.3d 1066, 1081 (9th Cir. 2006); *Cadillac Fairview/Cal., Inc. v. United States*, 41 F.3d 562, 565 n.4 (9th Cir. 1994) (per curiam) (*citing with approval United States v. Aceto Agric. Chems. Corp.*, 872 F.2d 1373, 1380 (8th Cir. 1989)); *see also Jones-Hamilton Co. v. Beazer Materials & Servs., Inc.*, 973 F.2d 688, 694-95 (9th Cir. 1992) (discussing *Aceto*, 872 F.2d at 1390). Accordingly, we have recognized, in addition to "direct" arranger liability, a "broader" category of arranger liability, *see United States v. Shell Oil Co.*, 294 F.3d 1045, 1054-55 (9th Cir. 2002), in which disposal of hazardous wastes is a foreseeable byproduct of, but not the purpose of, the transaction giving rise to PRP status.

"Direct" arranger liability — also referred to as " 'traditional' direct" arranger liability — involves transactions in which the central purpose of the transaction is disposing of hazardous wastes. *See id.*; *see, e.g.*, *Cadillac Fairview*, 41 F.3d at 563-65 (involving rubber companies that transferred contaminated styrene to Dow Chemical for reprocessing); *Catellus Dev. Corp. v. United States*, 34 F.3d 748, 749-50 (9th Cir. 1994) (involving a company that sold used automotive batteries to a lead reclamation plant). In contrast, "broader" arranger liability involves transactions that contemplate disposal as a *part* of, but not the focus of, the transaction; the "arranger" is either the source of the pollution or manages its disposal. *See Shell Oil*, 294 F.3d at 1058. In the "broader" arranger liability cases, such as *Shell Oil*, we examined the connection between the alleged arranger transaction and the disposal and decided whether the transaction necessarily constituted an arrangement for disposal of hazardous substances, whatever immediate form it may have taken.

These broader arranger cases can involve situations, like the present one, in which the alleged arrangers did not contract directly for the disposal of hazardous substances but did contract for the sale or transfer of hazardous substances,

which were then disposed of. *See, e.g.*, *Fla. Power & Light Co. v. Allis Chalmers Corp.*, 893 F.2d 1313, 1315, 1318 (11th Cir. 1990) (involving purchaser and recycler that sued manufacturer of transformers for cleanup costs from later disposal); *Mathews v. Dow Chemical Co.*, 947 F. Supp. 1517, 1519-20 (D. Colo. 1996) (involving neighbors of chemical company who sued manufacturer of paint thinner for contamination resulting from packaging paint thinner); *Courtaulds Aerospace, Inc. v. Huffman*, 826 F. Supp. 345, 347-48, 353-54 (E.D. Cal. 1993) (involving neighbor of smelting plant who sued companies that contracted with plant for burning and smelting of copper wire for resulting contamination). There are no Ninth Circuit cases in this category.[30]

[23] The inclusion of such circumstances within the "arranger" concept, however, accords with the statutory language and structure as a whole. To be an "arranger," one must "arrange[ ] for disposal or treatment, or arrange[ ] with a transporter for transport for disposal or treatment, of hazardous substances . . . ." § 9607(a)(3). CERCLA's definition of "disposal," in turn, includes "the discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into or on any land or water so that such solid waste or hazardous waste or constituent thereof may enter the environment or be . . . discharged into any waters, including ground waters." § 6903(3) (referred to by § 9601(29)). That "disposal" includes such unintentional pro-

[30]Although *Shell Oil* involved "broader" arranger liability, it concerned "arranger" liability of a customer, rather than a producer, of hazardous materials. 294 F.3d at 1056. There, the defendant oil companies sought to hold the United States liable as an "arranger" because the federal government had purchased large quantities of high octane fuel for military use; the process used by the oil companies to refine the fuel resulted in toxic waste that the oil companies later dumped at a site in California. *Id*. Because the United States was the end purchaser, never owned the intervening toxic products used in the refining process, and did not contract out the crucial, waste-producing intermediate step, we held that it was not an arranger under § 9607(a)(3). *Id*. at 1056-59.

cesses as "leaking" indicates that "disposal" need not be purposeful. *See Carson Harbor Vill.*, 270 F.3d at 880 (holding that "leaking" may not "require affirmative . . . conduct" (internal quotation marks omitted) (quoting and adopting interpretation of *United States v. CDMG Realty Co.*, 96 F.3d 706, 714 (3d Cir. 1996))). Thus, an entity can be an arranger even if it did not intend to dispose of the product. Arranging for a transaction in which there necessarily would be leakage or some other form of disposal of hazardous substances is sufficient.

2. "Useful Product" Doctrine

[24] While adopting a generally expansive view of arranger liability, we have refused to hold manufacturers liable as arrangers for selling a useful product containing or generating hazardous substances that *later* were disposed of. *See, e.g.*, *3550 Stevens Creek Assocs. v. Barclays Bank of Cal.*, 915 F.2d 1355, 1362-65 (9th Cir. 1990). As *Stevens Creek* and other "useful product" cases recognize, liability cannot extend so far as to include *all* manufacturers of hazardous substances, on the theory that there will have to be disposal of the substances some time down the line, *after* it is used as intended. *See, e.g.*, *Stevens Creek*, 915 F.2d at 1362-65 (refusing to hold manufacturer liable for costs of removing asbestos from building); *Fla. Power & Light*, 893 F.2d at 1318-19 (refusing to hold manufacturer of transformers liable for subsequent release of chemicals upon disposal of transformers). Also, the asserted liability in "useful product" cases generally involved only the normal use of those chemicals. *See, e.g.*, *Jordan v. S. Wood Piedmont Co.*, 805 F. Supp. 1575, 1577 (S.D. Ga. 1992) (involving the sale of chemicals to treat wood and the contamination from the wood treatment process); *Edward Hines Lumber Co. v. Vulcan Materials Co.*, 685 F. Supp. 651, 653 (N.D. Ill. 1988) (same).

[25] The useful product cases have no applicability where, as here, the sale of a useful product necessarily and immedi-

ately results in the leakage of hazardous substances. In that circumstance, the leaked portions of the hazardous substances are *never* used for their intended purpose. *See Zands v. Nelson*, 779 F. Supp. 1254, 1262 (S.D. Cal. 1991) (stating that "gasoline is no longer a useful product after it leaks into, and contaminates, the soil"); *see also Aceto*, 872 F.2d at 1381 (rejecting application of the useful product doctrine where "waste is generated *and disposed of* contemporaneously with the process" (emphasis added)).

Here, although Shell sold B&B a useful product, leakage of some of that product *before* B&B could use it was both inherent in the transfer process arranged by Shell and contemporaneous with that process.[31] Shell arranged for delivery of the substances to the site by its subcontractors; was aware of, and to some degree dictated, the transfer arrangements; knew that some leakage was likely in the transfer process; and provided advice and supervision concerning safe transfer and storage. Disposal of a hazardous substance was thus a necessary part of the sale and delivery process.

Put another way, the district court did not assign arranger liability to Shell for contamination resulting from the application of Shell's useful products to the soil as fertilizers or fumigants, or for disposal of contaminated soil after the products were used. Instead, the district court assigned arranger liability on the portion of product that never made it to the fields for its intended use but was disposed of prior to use. Because Shell's liability here stems from the leaked chemicals rather than the fertilizer that was used as fertilizer, the useful product doctrine is not applicable.

[31]For this reason, we also reject Shell's argument that, because manufacturers are taxed to provide money for the Superfund, Congress could not, without more, have intended for them to be subject to liability as arrangers. *See* 26 U.S.C. §§ 4661, 4662. Shell's liability derives not from its role as a manufacturer of a useful product but rather from its role in leakage prior to use. The Superfund tax is wholly irrelevant to the latter imposition of liability and certainly does not bar it.

3. Control and Ownership

Much of the district court's analysis relies on the factual determination that spills would necessarily occur during the transfer of Shell's chemicals to B&B. Shell maintains that this finding was inadequate, because Shell did not itself transport the chemicals or participate in transferring the chemicals to B&B's containers. Central to this contention is Shell's insistence that it lacked ownership and control of the chemicals at the time of transfer and so could not be an "arranger." We do not agree that the district court's findings about Shell's involvement were insufficient to support "arranger" liability.

There was evidence before the district court that: (1) Spills occurred *every time* the deliveries were made; (2) Shell arranged for delivery and chose the common carrier that transported its product to the Arvin site; (3) Shell changed its delivery process so as to require the use of large storage tanks, thus necessitating the transfer of large quantities of chemicals and causing leakage from corrosion of the large steel tanks; (4) Shell provided a rebate for improvements in B&B's bulk handling and safety facilities and required an inspection by a qualified engineer; (5) Shell regularly would reduce the purchase price of the D-D, in an amount the district court concluded was linked to loss from leakage; and (6) Shell distributed a manual and created a checklist of the manual requirements, to ensure that D-D tanks were being operated in accordance with Shell's safety instructions.

The parties vigorously dispute whether, given these facts, Shell owned the pesticide during the transfer and controlled the transfer process. Although the district court addressed these questions and resolved them against Shell, we do not enter this controversy. The text of the statute does not require that the arranger own the hazardous wastes, either at the time the "arranger" arranged for the transaction or at the time of transfer of ownership. *See Pakootas*, 452 F.3d at 1081. Indeed, to require ownership at the time of disposal "would

make it too easy for a party, wishing to dispose of a hazardous substance, to escape by a sale its responsibility to see that the substance is safely disposed of." *Catellus*, 34 F.3d at 752. Nor is control a statutory requirement, *Cadillac Fairview*, 41 F.3d at 565, although it has been viewed as a pertinent consideration in cases quite different from this one.

Where an owner of hazardous substances *directly* "arranges" for disposal — by, for example, using a hazardous substance disposal company — that owner is plainly an "arranger" even if it has nothing more to do with disposal. *See, e.g.*, *Catellus*, 34 F.3d at 752. In "broader" arranger liability cases, however, we have tended to view control as a "crucial element" in determining whether the party arranged for disposal. *Shell Oil*, 294 F.3d at 1055. We also have viewed ownership of hazardous substances at the time of disposal as an important factor in nontraditional, indirect arranger liability cases. *See Jones-Hamilton*, 973 F.2d at 695 (*relying on Aceto*, 872 F.2d at 1380).

None of these cases, however, indicates that ownership or control at the time of transfer are the sine qua non of nontraditional arranger liability. Instead, ownership and control at time of disposal are useful indices or clues toward the end of "look[ing] beyond defendants' characterizations to determine whether a transaction in fact involves an arrangement for the disposal of a hazardous substance." *Aceto*, 872 F.2d at 1381. In *Shell Oil*, for example, the government *never* owned the chemicals before disposal occurred, so control over the substances was an important factor in determining whether or not the government could have "arranged" for disposal. *Shell Oil*, 294 F.3d at 1057-59.

[26] Here, ownership at the time of disposal is not an informative consideration, and control is informative only in light of additional considerations. Unlike in *Shell Oil*, where the absence of *any* ownership or control was a clue concerning whether the sales transaction necessarily contemplated dis-

posal as an inherent part of the transaction, Shell here owned the chemicals at the time the sale was entered into. The statute requires nothing more in terms of ownership. We therefore need not determine the precise moment when ownership transferred to B&B. As to the control question, the district court's findings, recited above, demonstrate that Shell had sufficient control over, and knowledge of, the transfer process to be considered an "arranger," within the meaning of CERCLA, for the disposal of the chemicals that leaked.

4. Groundwater Contamination

Shell, finally, contends that the court erred when it determined that it contributed to the groundwater contamination, maintaining that D-D evaporates or disperses rather than remaining in toxic form in the soil. The district court's analysis on this issue is factually complex and based on several weeks of testimony. The district court made specific findings that D-D can indeed enter groundwater. Those findings are based on the testimony of experts whom the court found persuasive. In light of the complexity of the science and the substantial expert evidence supporting the finding, the district court's determination was not clearly erroneous.

IV. Conclusion

The district court erred in determining that the harm in this case could be apportioned on this record. Given the district court's erroneous approach and the paucity of record evidence, there is no reasonable basis for apportioning the damages attributable to the Railroads' activity. Shell's liability is a closer call, but the evidence on the record in that regard is also insufficient to support apportionment.

The district court followed the proper analysis in finding that Shell is liable as an arranger. Shell arranged for the sale and transfer of chemicals under circumstances in which a

known, inherent part of that transfer was the leakage, and so the disposal, of those chemicals.

We therefore reverse as to the district court's finding on apportionment. We affirm the district court's findings regarding both the Railroads' and Shell's liability. The Railroads and Shell are jointly and severally liable for the harm at the Arvin site, except with regard to the so-called "Dinoseb hot spot."[32] We remand for further proceedings not inconsistent with this opinion.

REVERSED in part and AFFIRMED in part.

[32]The district court found that the "Dinoseb hot spot" was a discrete area contaminated by Dinoseb (a Dow product) as the result of a major spill in 1983, that Shell did not manufacture or ship that product, and that Shell thus bore no responsibility for any part of the $1.3 million cost of cleaning up this discrete spill. The governments did not challenge this finding on appeal. That finding therefore stands, and the district court should not include the $1.3 million dollar cleanup costs for the "Dinoseb hot spot" in the calculation of Shell's liability.