

**United States Court of Appeals**  
FOR THE DISTRICT OF COLUMBIA CIRCUIT

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Argued October 17, 2005

Decided March 7, 2006

No. 04-1438

NATURAL RESOURCES DEFENSE COUNCIL,  
PETITIONER

v.

ENVIRONMENTAL PROTECTION AGENCY AND  
STEPHEN L. JOHNSON, ADMINISTRATOR, U.S.  
ENVIRONMENTAL PROTECTION AGENCY,  
RESPONDENTS

METHYL BROMIDE INDUSTRY PANEL OF THE AMERICAN  
CHEMISTRY COUNCIL,  
INTERVENOR

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On Petition for Review of an Order of the  
Environmental Protection Agency

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*David D. Doniger* argued the cause for petitioner. With him on the briefs was *Amanda C. Leiter*.

*Steven E. Rusak*, Attorney, U.S. Department of Justice, argued the cause for respondents. With him on the brief were *Kelly A. Johnson*, Acting Assistant Attorney General, *John C. Cruden*, Deputy Assistant Attorney General, *Ann R. Klee*, General Counsel, U.S. Environmental Protection Agency, and

*Diane E. McConkey*, Counsel.

*David B. Weinberg*, *Tracy A. Heinzman*, and *Eric Andreas* were on the brief for intervenor.

Before: HENDERSON and RANDOLPH, *Circuit Judges*, and EDWARDS, *Senior Circuit Judge*.\*

Opinion for the Court filed by *Circuit Judge* RANDOLPH.

RANDOLPH, *Circuit Judge*: The United States and other countries entered into a treaty in which they agreed to reduce the use of certain substances, including methyl bromide, that degrade the stratospheric ozone layer. The Environmental Protection Agency (EPA) issued a rule implementing “critical use” exemptions from the treaty’s general ban on production and consumption of methyl bromide. The Natural Resources Defense Council (NRDC) claims that the EPA rule violates the treaty and the Clean Air Act. We hold that NRDC lacks standing and therefore dismiss the petition for judicial review.

I.

In the mid-1970s, scientists discovered that certain man-made chemicals can destroy the layer of ozone gas in the stratosphere approximately ten to twenty-five miles above the Earth’s surface. Stratospheric ozone absorbs ultraviolet radiation; as the ozone layer thins, less radiation is absorbed. Increased human exposure to ultraviolet radiation is linked to a range of ailments, including skin cancer and cataracts.

Amidst growing international concern about ozone

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\* Senior Circuit Judge Edwards was in regular active service at the time of oral argument.

depletion, the United States and twenty-four other nations entered into the Montreal Protocol on Substances that Deplete the Ozone Layer, Sept. 16, 1987, S. TREATY DOC. NO. 100-10, 1522 U.N.T.S. 29 (“Montreal Protocol”). The Protocol requires signatory nations – which now number 189 – to reduce and eliminate their production and use of ozone-depleting chemicals in accordance with agreed-upon timetables. Montreal Protocol arts. 2-2I. The Senate ratified the treaty in 1988, and Congress incorporated its terms into domestic law through the Clean Air Act Amendments of 1990, Pub. L. No. 101-549, tit. VI, 104 Stat. 2399, 2648. Since then, the United States has reduced its use of methyl bromide to less than 39% of its 1991 baseline.

In 1997, the Parties “adjusted” the Protocol to require developed-country Parties to cease “production” and “consumption”<sup>1</sup> of methyl bromide by 2005. *See* Montreal Protocol art. 2H(5).<sup>2</sup> In response, Congress amended the Clean

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<sup>1</sup> “Production” is defined as “the amount of controlled substances produced, minus the amount destroyed [under the Protocol] and minus the amount entirely used [to produce other chemicals].” Montreal Protocol art. 1(5). “Consumption” is “production plus imports minus exports of controlled substances.” *Id.* art. 1(6).

<sup>2</sup> Current article 2H was added by “adjustment” at the Ninth Meeting of the Parties. *See* U.N. Env’t Programme, *Report of the Ninth Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer*, U.N. Doc. UNEP/OzL.Pro.9/12, annex III (Sept. 25, 1997) (“*Ninth Report*”). The Protocol allows “adjustments” to be made without formal amendment and ratification. *See* Montreal Protocol art. 2(9). In incorporating the Protocol into domestic law, Congress defined the Protocol to include “adjustments adopted by the Parties thereto and amendments that have entered into force.” 42 U.S.C. § 7671(9). Neither party in this case discusses whether altering domestic law in this manner is constitutional, an issue on which we express no view. *See* Edward T. Swaine, *The Constitutionality of International Delegations*, 104 COLUM. L. REV.

Air Act to require EPA to “promulgate rules for reductions in, and terminate the production, importation, and consumption of, methyl bromide under a schedule that is in accordance with, but not more stringent than, the phaseout schedule of the Montreal Protocol Treaty as in effect on October 21, 1998.” 42 U.S.C. § 7671c(h).

Methyl bromide is a naturally-occurring gas with significant “ozone depletion potential” (“ODP”). The United States regulates methyl bromide as a “Class I” ozone-depleting substance. *See id.* Methyl bromide has an ODP of 0.38-0.60. This puts it in the middle range of substances scheduled for elimination under the Protocol. It is not nearly as destructive as chloroflourocarbons (ODP = 1.0) and most other class I substances, almost all of which were phased out in 2000, 42 U.S.C. § 7671c(b). On the other hand, it is significantly more destructive than “class II” substances, which are to be phased out in 2030. *See* 42 U.S.C. § 7671d(b).

Methyl bromide is used as a broad-spectrum pesticide. *See* Protection of Stratospheric Ozone: Process for Exempting Critical Uses From the Phaseout of Methyl Bromide, 69 Fed. Reg. 76,982, 76,983 (Dec. 23, 2004) (codified at 40 C.F.R. pt. 82) (“Final Rule”). It is typically injected into soil as a fumigant before several types of crops are planted. In light of its wide use and the lack of comparable substitute pesticides, *see id.* at 76,985, the Protocol allows exemptions from the general ban “to the extent that the Parties decide to permit the level of production or consumption that is necessary to satisfy uses agreed by them to be critical uses.” Montreal Protocol art. 2H(5); *see also* 42 U.S.C. § 7671c(d)(6) (“To the extent consistent with the Montreal Protocol, the [EPA] Administrator . . . may exempt the production, importation, and consumption of methyl bromide for critical uses.”).

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1492, 1512-15 (2004) (citing Montreal Protocol).

When the Parties adopted this critical use exemption, they also issued a “decision” setting forth guidelines for implementing the exemption. *See Ninth Report, supra* note 2, at 26-27 (“Decision IX/6”). Decision IX/6 defines critical uses as those for which the absence of methyl bromide would “result in a significant market disruption” and for which there is no “technically and economically feasible alternative[] or substitute[] available.” *Id.* ¶ 1(a)(I), (ii). It further provides that production and consumption of methyl bromide are to be permitted only if “[a]ll technically and economically feasible steps have been taken to minimize the critical use” and if “[m]ethyl bromide is not available in sufficient quantity and quality from existing stocks of banked or recycled methyl bromide.” *Id.* ¶ 1(b)(I), (ii).

The United States formally began the process of establishing its 2005 critical use exemptions in May 2002, when EPA published a notice in the *Federal Register* seeking applications for 2005 and 2006 critical uses of methyl bromide and the amounts of new production and consumption needed to satisfy those uses. *See* 67 Fed. Reg. 31,798 (May 10, 2002). EPA teams composed of biologists and economists reviewed each application and decided which to include in the aggregate U.S. nomination to the Parties. The final U.S. nomination, submitted to the Montreal Protocol’s administrative body (the “Ozone Secretariat”) in February 2003, requested a total exemption of about ten thousand metric tons of methyl bromide for sixteen different uses.

The process then moved to the international stage. Two working groups operating under the auspices of the Ozone Secretariat – the “Methyl Bromide Technical Options Committee” and the “Technology and Economic Assessment Panel” – evaluated each country’s nomination and made a recommendation to the Parties at their November 2003 meeting.

At that meeting, the Parties deadlocked over the proposed critical use exemptions and called an “extraordinary meeting” to make the final decisions. *See* U.N. Env’t Programme, *Report of the Fifteenth Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer*, U.N. Doc. UNEP/OzL.Pro.15/9, at 8-11, 77-78 (Nov. 11, 2003).

The Parties reached agreement at their First Extraordinary Meeting in March 2004. They granted the United States critical uses in sixteen categories, amounting to 8942 metric tons of methyl bromide. To satisfy these critical uses, the Parties authorized 7659 metric tons of new production and consumption, with the remainder (1283 metric tons) to be made up from existing stocks of methyl bromide. *See* U.N. Env’t Programme, *Report of the First Extraordinary Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer*, U.N. Doc. UNEP/OzL.Pro.ExMP/1/3, at 14-15, 26 (Mar. 27, 2004) (“Decision Ex.I/3”). Several conditions accompanied this approval. Decision Ex.I/3 noted that “each Party which has an agreed critical use should ensure that the criteria in paragraph 1 of decision IX/6<sup>3</sup>] are applied when . . . authorizing the use of methyl bromide and that such procedures take into account available stocks.” *Id.* ¶ 5. The decision also prevents the Parties from using those stocks in excess of the overall critical use amount. *Id.* ¶ 3.

With Decision Ex.I/3 in hand, EPA proposed rules to implement the critical use exemption. *See* 69 Fed. Reg. 52,366 (Aug. 25, 2004). Many parties, including NRDC, submitted comments. The Final Rule, issued in December 2004, authorizes new production and consumption up to the limit

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<sup>3</sup> As discussed above, Decision IX/6 permits exemptions only when all technically and economically feasible steps have been taken to minimize the required use and when methyl bromide is not available from existing stocks. *Id.* ¶ 1(b)(I), (ii).

established in Decision Ex.I/3. Final Rule, 69 Fed. Reg. at 76,990 tbl.1. It also authorizes the use of stocks as permitted by the decision, *id.* at 76,986, 76,991 tbl.2, and permits non-critical users to draw upon existing stocks, *id.* at 76,988.<sup>4</sup>

NRDC believes the Final Rule violates Decision IX/6 and Decision Ex.I/3 because EPA failed to disclose the full amount of existing stocks, failed to offset new production and consumption by the full amount of these stocks, and failed to reserve the stocks for critical uses, and because the total amount of methyl bromide critical use the Final Rule authorizes is not the technically and economically feasible minimum.<sup>5</sup> The majority of these claims depend upon the legal status of Decisions IX/6 and Ex.I/3.

After oral argument, we ordered supplemental briefing to address the question whether consensus decisions of the Parties are “cognizable in federal court actions brought to enforce the Protocol and the relevant terms of the Clean Air Act.” EPA and NRDC agree that the decisions are not

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<sup>4</sup>After NRDC filed its petition for judicial review, the Parties met again and approved 2006 critical uses, *see* U.N. Env’t Programme, *Report of the Second Extraordinary Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer*, U.N. Doc. UNEP/OzL.Pro.ExMP/2/3, at 5-6 (July 1, 2005), with no apparent comment on the United States’s 2005 domestic process. EPA has issued a rule to implement the 2006 exemptions. *See* Protection of Stratospheric Ozone: The 2006 Critical Use Exemption from the Phaseout of Methyl Bromide, 71 Fed. Reg. 5985 (Feb. 6, 2006) (to be codified at 40 C.F.R. pt. 82).

<sup>5</sup> EPA argues in turn that the plain language of the decisions does not require that a party exhaust existing stocks of methyl bromide before carrying out exempted production and consumption or that existing stocks be restricted to critical uses. We express no opinion on the merits of EPA’s and NRDC’s competing interpretations.

“adjustments” to the Protocol. But they disagree on the legal consequences of the decisions. The legal status of consensus decisions of parties to a treaty, decisions not ratified by the Senate or otherwise incorporated into domestic statutory law, presents novel and difficult issues. We do not reach these issues because NRDC lacks standing to press its claims.

## II.

NRDC must establish that at least one of its members has standing in his own right. *Sierra Club v. EPA*, 292 F.3d 895, 898 (D.C. Cir. 2002) (citing *Hunt v. Wash. State Apple Adver. Comm’n*, 432 U.S. 333, 342-43 (1977)). For that member, the “irreducible constitutional minimum” is injury-in-fact, causation, and redressability. *Lujan v. Defenders of Wildlife*, 504 U.S. 555, 560 (1992). NRDC claims that its members have standing because they face a greater chance of contracting skin cancer, cataracts, and other ailments under EPA’s Final Rule than under NRDC’s interpretation of Decisions IX/6 and Ex.I/3.<sup>6</sup>

The central question is whether, to the extent EPA’s rule increases the probability of such harms, the increase amounts to an “injury in fact” sufficiently “concrete and particularized” and “actual or imminent, not conjectural or hypothetical” to satisfy the demands of Article III. *Friends of the Earth, Inc. v. Laidlaw Env’tl. Servs.*, 528 U.S. 167, 180-81 (2000) (citing *Lujan*, 504 U.S. at 560-61).

NRDC supports its claim with an affidavit from Dr. Sasha Madronich, which states that “it is reasonable to expect

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<sup>6</sup> The chain of causation presumably goes something like this: EPA has permitted too much new production and consumption of methyl bromide, which will result more emissions, which will increase ozone depletion, which ultimately will adversely affect NRDC’s members’ health. In light of our disposition, we express no opinion regarding the sufficiency of this causal chain.

more than 10 deaths, more than 2,000 non-fatal skin cancer cases, and more than 700 cataract cases to result from the 16.8 million pounds of new production and consumption allowed by the 2005 exemption rule.” Aff. of Dr. Sasha Madronich ¶ 8. There are reasons to doubt Dr. Madronich’s methodology and assumptions.<sup>7</sup> A key input in his model, for instance, is a projection of methyl bromide critical use exemptions from 2005 through 2018. *Id.* att. 1, at Ex.4.1.1. But the record contains no evidence to suggest that EPA plans to make such nominations beyond 2006. Dr. Madronich also fails to mention that his model predicts health outcomes over a period of 145 years. *Id.* att. 2, at Ex.8.3.1. In addition, NRDC assumes that Dr. Madronich’s numbers are for the United States alone, but there is no reason to assume this. Ozone depletion is a world-wide phenomenon, and nothing in Dr. Madronich’s affidavit or its supporting material is restricted only to this country.

But even if the conclusions Dr. Madronich reaches are accurate and even if they pertain only to the United States, the results he cites are minuscule. Take, for example, his estimate of ten more deaths from skin cancer. There are approximately 293 million people in the United States. With ten more skin cancer deaths over 145 years, the probability of fatality from EPA’s rule comes to 1 in *4.2 billion* per person per year.<sup>8</sup> As the

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<sup>7</sup> The intervenor’s expert, for example, asserts that Dr. Madronich’s model fails to account for key behavioral variations that affect health outcomes, Aff. of Dr. Louis Anthony Cox, Jr. ¶¶ 8-9, and that the model improperly assumes a perfectly linear relationship between methyl bromide emissions and adverse health effects, *id.* ¶ 10.

<sup>8</sup> To determine the additional likelihood that someone in the United States will die of skin cancer during the next 145 years, we divide the total number of deaths by the U.S. population during the next 145 years (assuming zero population growth):

intervenor’s expert points out, the estimated effect on the subset of the U.S. population who are NRDC members (about 490,000) is infinitesimal. “[E]ven if all present NRDC members were *immortal* we could expect to wait approximately 12,000 years . . . before seeing the first . . . methyl bromide exemption-related death.” Aff. of Dr. Louis Anthony Cox, Jr. ¶ 12.<sup>9</sup>

$$\frac{10 \text{ deaths}}{293,000,000 \text{ people} \cdot 145 \text{ years}} = \frac{10 \text{ deaths}}{2.93 \times 10^8 \text{ people} \cdot 1.45 \times 10^2 \text{ years}} =$$

$$\frac{10 \text{ deaths}}{4.2485 \times 10^{10} \text{ people} \cdot \text{years}} = \frac{10 \text{ deaths}}{4.2485 \text{ people} \cdot \text{years}} \times \frac{1}{10^{10}} \approx$$

$$2.3538 \times 10^{-10} \frac{\text{deaths}}{\text{people} \cdot \text{years}} \approx \frac{1}{4,200,000,000} \text{ deaths per capita year}$$

The other risks Dr. Madronich cites are similarly small. This analysis shows that an individual in the United States has a 1 in 21 million chance of contracting non-fatal skin cancer and a 1 in 61 million chance of getting a cataract over the next 145 years.

<sup>9</sup> To determine excess fatalities among current NRDC members, we simply multiply the total U.S. deaths per capita year (above) by the number of NRDC members and their remaining years of exposure to the sun (presumed to be 100 to generate an upper bound):

$$\frac{2.3538 \text{ deaths}}{10^{10} \text{ people} \cdot \text{years}} \times 490,274 \text{ people} \times 100 \text{ years} =$$

$$\frac{2.3538 \text{ deaths}}{10^{10}} \times \frac{4.90274 \times 10^5}{1} \times \frac{1 \times 10^2}{1} \approx \frac{11.5399 \text{ deaths}}{10^3} =$$

The Supreme Court requires that an alleged injury be “actual or imminent, not ‘conjectural’ or ‘hypothetical.’” *Whitmore v. Arkansas*, 495 U.S. 149, 155 (1990) (quoting *City of Los Angeles v. Lyons*, 461 U.S. 95, 101-02 (1983)); see *520 S. Mich. Ave. Assocs., Ltd. v. Devine*, 433 F.3d 961, 962-63 (7th Cir. 2006). Some injuries fit easily within or without the common definitions of “actual” or “imminent.” Others do not. Among those which fit least well are purely probabilistic injuries. Environmental or public health injuries, for example, may have complex etiologies that involve the interaction of many discrete risk factors. The chance that one may develop cancer can hardly be said to be an “actual” injury – the harm has not yet come to pass. Nor is it “imminent” in the sense of temporal proximity. Cf. *Lyons*, 461 U.S. at 105-06. Yet the Supreme Court has reminded us that imminence is “a somewhat

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$$\frac{1.15399 \text{ deaths}}{10^2} = .0115399 \text{ NRDC deaths}$$

To determine mathematically how often one would expect the death of an NRDC member to occur, we simply create an equality and solve for  $x$ :

$$\frac{.0115399 \text{ deaths}}{145 \text{ years}} = \frac{1 \text{ death}}{x \text{ years}}$$

$$(.0115399 \text{ deaths})(x \text{ years}) = 145 \text{ deaths} \cdot \text{years}$$

$$x \text{ years} = \frac{145 \text{ deaths} \cdot \text{years}}{.0115399 \text{ deaths}}$$

$$x \text{ years} \approx 12,565.0657 \text{ years}$$

elastic concept,” the purpose of which is to “ensure that the alleged injury is not too speculative for Article III purposes.” *Lujan*, 504 U.S. at 564 n.2; *see also Fla. Audubon Soc’y v. Bentsen*, 94 F.3d 658, 663 (D.C. Cir. 1996) (en banc). And the Court has often held that “threatened” injuries can give rise to standing. *See Valley Forge Christian Coll. v. Ams. United for Separation of Church & State, Inc.*, 454 U.S. 464, 472 (1982); *see also Friends of the Earth, Inc. v. Gaston Copper Recycling Corp.*, 204 F.3d 149, 160 (4th Cir. 2000) (en banc).

In this court, “well established” precedent requires that the injury alleged be “substantially probable.” *Fla. Audubon*, 94 F.3d at 666; *see Sierra Club v. EPA*, 292 F.3d 895, 898, 899, 902 (D.C. Cir. 2002); *Am. Petroleum Inst. v. EPA*, 216 F.3d 50, 63-64, 67 (D.C. Cir. 2000); *La. Envtl. Action Network v. EPA*, 172 F.3d 65, 68 (D.C. Cir. 1999); *Kurtz v. Baker*, 829 F.2d 1133, 1144 (D.C. Cir. 1987). The Supreme Court too has spoken of the need for a “substantial probability” of harm, *Warth v. Seldin*, 422 U.S. 490, 504 (1975), and of the requirement that the plaintiff “demonstrate a realistic danger of sustaining a direct injury as a result” of the governmental action at issue. *Babbitt v. United Farm Workers Nat’l Union*, 442 U.S. 289, 298 (1979); *see also 520 S. Mich. Ave. Assocs.*, 433 F.3d at 962 (“Standing depends on the probability of harm . . .”).

Probability is a measurement or an estimate of the likelihood of an event occurring. We have never specified exactly what counts as a “substantial probability.” In some cases it might not be possible to quantify the probability of harm. In other cases, the “risk” – that is, the combination of the probability of a negative event and the impact of it – may affect the assessment. *See Mountain States Legal Found. v. Glickman*, 92 F.3d 1228, 1234 (D.C. Cir. 1996). But one thing is certain. Whatever “substantial probability” means, it at least means – as we said in *Mountain States Legal Foundation v. Glickman* – a

“non-trivial” chance of injury. *Id.* at 1235. The probability of harm to NRDC’s members from EPA’s rule is by any measure not of that magnitude.

NRDC contends, and several other courts of appeals have suggested, that an increase in probability itself constitutes an “actual or imminent” injury. *See Baur v. Veneman*, 352 F.3d 625, 634 (2d Cir. 2003); *Cent. Delta Water Agency v. United States*, 306 F.3d 938, 947-48 (9th Cir. 2002); *Gaston Copper*, 204 F.3d at 160; *see also Covington v. Jefferson County*, 358 F.3d 626, 652 (9th Cir. 2004) (Gould, J., concurring). Put another way, the fact that governmental action or inaction increases the likelihood of injury – regardless of the magnitude of the increase – constitutes injury in the constitutional sense. Strictly speaking, this cannot be correct. For example, if the original probability of harm is 1 in 100 billion per person per year, doubling the probability to 2 in 100 billion would still leave an individual with a trivial chance of injury. The *Baur* court acknowledged the “potential expansiveness of recognizing exposure to enhanced risk as injury-in-fact.” 352 F.3d at 636. “Expansiveness” is an understatement. *See id.* at 651 n.3 (Pooler, J., dissenting) (“Allowing a lawsuit to go forward on the basis of such a remote harm would be akin to saying that any citizen has standing to sue the National Aeronautics and Space Administration because it currently does not do enough to prevent meteorites from falling to Earth.”); *Ctr. for Law & Educ. v. Dep’t of Educ.*, 396 F.3d 1152, 1161 (D.C. Cir. 2005) (“[W]ere all purely speculative ‘increased risks’ deemed injurious, the entire requirement of ‘actual or imminent injury’ would be rendered moot . . .”); *Shain v. Veneman*, 376 F.3d 815, 818 (8th Cir. 2004) (rejecting “the proposition that a heightened risk of future harm is a cognizable injury”).

In any event, the law of this circuit is that an increase in the likelihood of harm may constitute injury in fact only if the

increase is sufficient to “take a suit out of the category of the hypothetical.” *Mountain States*, 92 F.3d at 1234-35 (quoting *Vill. of Elk Grove Vill. v. Evans*, 997 F.2d 328, 329 (7th Cir. 1993)); see *La. Envtl. Action Network*, 172 F.3d at 68; *Fla. Audubon*, 94 F.3d at 666; *accord Shain*, 376 F.3d at 818. And as we have said, the probability of additional deaths and other ailments to NRDC’s members resulting from EPA’s rule hardly makes their alleged injury in fact anything other than “speculative” and hypothetical. *Lujan*, 504 U.S. at 564 n.2; *Mountain States*, 92 F.3d at 1234-35.

For the same reasons, there is nothing to NRDC’s assertion that its members must now add to the precautions they already take against exposure to sunlight. Given the probabilities, any extra precautions in response to EPA’s rule would be irrational. “It is the reality of the threat of . . . injury that is relevant to the standing inquiry, not the plaintiff’s subjective apprehensions.” *Lyons*, 461 U.S. at 107 n.8.

Because NRDC lacks standing, the petition for review is dismissed.

*So ordered.*