

FOR PUBLICATION
UNITED STATES COURT OF APPEALS
FOR THE NINTH CIRCUIT

In re: HANFORD NUCLEAR
RESERVATION LITIGATION,

BARBARA JEAN PHILLIPS,
Plaintiff,

and

WANDA BUCKNER; SHIRLEY
CARLISLE,
Plaintiffs-Appellants,

v.

E.I. DUPONT DE NEMOURS & CO., a
Delaware corporation; GENERAL
ELECTRIC CO., a New York
corporation; UNC NUCLEAR
INDUSTRIES, INC., a Delaware
corporation,
Defendants-Appellees.

No. 05-35648

D.C. No.
CV-91-03015-WFN

3584 IN RE: HANFORD NUCLEAR RESERVATION LITIGATION

In re: HANFORD NUCLEAR
RESERVATION LITIGATION,

BARBARA JEAN PHILLIPS,
Plaintiff,

and

GLORIA HOPE; CLARA REISS;
GLENDA WINSLOW; KATHRYN J.
GOLDBLOOM, aka Kathryn Janelle
Goldbloom,
Plaintiffs-Appellants,

v.

E.I. DUPONT DE NEMOURS & CO., a
Delaware corporation; GENERAL
ELECTRIC CO., a New York
corporation; UNC NUCLEAR
INDUSTRIES, INC., a Delaware
corporation,
Defendants-Appellees.

No.05-35651

D.C. No.
CV-91-03015-WFN

IN RE: HANFORD NUCLEAR RESERVATION LITIGATION 3585

In re: HANFORD NUCLEAR
RESERVATION LITIGATION,

BARBARA JEAN PHILLIPS,
Plaintiff,

and

GLORIA HOPE; CLARA REISS;
GLENDA WINSLOW; WANDA
BUCKNER; KATHRYN J. VANCAMPEN,
aka Kathryn Janelle Goldbloom;
SHIRLEY CARLISLE,
Plaintiffs-Appellees,

v.

E.I. DUPONT DE NEMOURS & CO., a
Delaware corporation; GENERAL
ELECTRIC CO., a New York
corporation,

Defendants-Appellants,

and

UNC NUCLEAR INDUSTRIES, INC., a
Delaware corporation,

Defendant.

No. 05-35678

D.C. No.
CV-91-03015-WFN

3586 IN RE: HANFORD NUCLEAR RESERVATION LITIGATION

BARBARA JEAN PHILLIPS,
Plaintiff,

and
STEVEN STANTON; GLORIA WISE,
Plaintiffs-Appellees,

v.
E.I. DUPONT DE NEMOURS & CO.;
GENERAL ELECTRIC CO.,
Defendants-Appellants.

No. 05-35866
D.C. No.
CV-91-03015-WFN

IN RE: HANFORD NUCLEAR RESERVATION LITIGATION 3587

PAMELA DURFEY; PAULENE ECHO
HAWK; DOROTHY GEORGE, on their
own behalf and on behalf of a
class of similarly situated persons,
Plaintiffs-Appellants,

v.

E. I. DUPONT DE NEMOURS & Co.,
a Delaware Corporation; GENERAL
ELECTRIC Co., a New York
Corporation, UNC NUCLEAR
INDUSTRIES, INC., a Delaware
Corporation, ATLANTIC RICHFIELD
COMPANY, ATLANTIC RICHFIELD-
HANFORD Co., a Washington
Corporation; ROCKWELL
INTERNATIONAL CORP., a Delaware
Corporation; WESTINGHOUSE
HANFORD CORP., a Delaware
Corporation; WESTINGHOUSE
ELECTRIC CORP., a Pennsylvania
Corporation,
Defendants-Appellees.

No. 05-35892

D.C. No.
CV-93-03087-WFN

3588 IN RE: HANFORD NUCLEAR RESERVATION LITIGATION

In re: HANFORD NUCLEAR
RESERVATION LITIGATION,

PAMELA DURFEY; PAULINE ECHO
HAWK; DOROTHY GEORGE, on their
own behalf and on behalf of a
class of similarly situated persons,
Plaintiffs-Appellants,

v.

E.I. DUPONT DE NEMOURS & CO., a
Delaware corporation; GENERAL
ELECTRIC CO., a New York
corporation; UNC NUCLEAR
INDUSTRIES, INC., a Delaware
corporation; ATLANTIC RICHFIELD
COMPANY; ATLANTIC RICHFIELD-
HANFORD CO., a Washington
corporation; ROCKWELL
INTERNATIONAL CORP., a Delaware
corporation; WESTINGHOUSE
HANFORD CORPORATION, a Delaware
corporation; WESTINGHOUSE
ELECTRIC CORP., a Pennsylvania
corporation,
Defendants-Appellees.

No. 05-35895

D.C. No.
CV-91-03015-WFN

IN RE: HANFORD NUCLEAR RESERVATION LITIGATION 3589

In re: HANFORD NUCLEAR
RESERVATION LITIGATION,

SHANNON C. RHODES,
Plaintiff-Appellant,

v.

E.I. DUPONT DE NEMOURS & Co., a
Delaware corporation; GENERAL
ELECTRIC Co., a New York
corporation,

Defendants-Appellees.

No. 06-35165

D.C. No.
CV-91-03015-WFN

ORDER
AMENDING
OPINION AND
AMENDED
OPINION

Appeal from the United States District Court
for the Eastern District of Washington
Wm. Fremming Nielsen, Senior Judge, Presiding

Argued and Submitted
February 7, 2007—Pasadena, California

Filed August 14, 2007
Amended April 4, 2008

Before: Mary M. Schroeder, Alfred T. Goodwin and
Michael Daly Hawkins, Circuit Judges.

Opinion by Judge Schroeder

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COUNSEL

Peter Nordberg, Berger & Montague, P.C., Philadelphia, Pennsylvania; Roy S. Haber, Roy S. Haber, P.C., Eugene, Oregon; Daniel Johnson and David Breskin, Short Cressman & Burgess, PLLC, Seattle, Washington, for the plaintiffs-appellants-appellees.

Christopher Landau, Kirkland & Ellis, LLP, Washington, D.C., for the defendants-appellees-appellants.

ORDER

The opinion in this matter filed on August 14, 2007, and published at *In re Hanford Nuclear Reservation Litigation*, 497 F.3d 1005 (9th Cir. 2007), is amended as follows.

On slip op. 9798, delete the last two sentences of the first full paragraph and replace with the following:

We hold that any Hanford Plaintiffs who filed independent suits pending class certification are entitled to class action tolling.

On slip op. 9807, delete the last sentence of the first partial paragraph and substitute the following:

Congress did not have the benefit of any well-established common law principles relating to the government contractor defense when Congress drafted the relevant provisions of the PAA. The Supreme Court defined the defense only a few weeks before the PAA was signed into law.

Delete the last sentence of the first partial paragraph on slip op. 9808 and substitute the following:

We therefore conclude that the government contractor defense was not judicially well-established at the time Congress enacted the PAA.

Delete the first full paragraph on slip op. 9808 and substitute the following:

Because Congress did not enact the PAA against a backdrop of well-established common law principles that included the government contractor defense, we cannot grant immunity from liability.

Defendants argue that even if the doctrine was not judicially well-established, Congress passed the 1988 amendments to the Act with the defense in mind and intended that it apply. The defendants point to a provision in the PAA relating to underground detonation. The provision is 42 U.S.C. § 2210(d)(7), which states as follows:

A contractor with whom an agreement of indemnification has been executed under paragraph (1)(A) and who is engaged in activities connected with the underground detonation of a nuclear explosive device shall be liable, to the extent so indemnified under this subsection, for injuries or damage sustained as a result of such detonation in the same manner and to the same extent as would a private person acting as principal, and no immunity or defense founded in the Federal, State, or municipal character of the contractor or of the work to be performed under the contract shall be effective to bar such liability.

Defendants contend the provision demonstrates that Congress intended to eliminate the modern govern-

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ment contractor defense for underground detonation and further contend that the provision demonstrates Congress intended the government contractors defense as we know it today to apply to all other claims arising out of nuclear incidents.

The language of § 2210(d)(7) is not clear. It refers to “immunity or defense” founded on the “character of the contractor or of the work.” It thus appears to be referring to traditional sovereign immunity from any liability rather than the more sophisticated principles of accountability that underlie modern exceptions of governmental tort liability. *See* Federal Tort Claims Act, 28 U.S.C. § 2680(a); *Boyle*, 487 U.S. at 512.

Even assuming, however, that Congress intended to ensure that the modern defense did not apply to underground detonation claims, it does not follow that Congress also intended, without saying so, that the defense would apply in all other situations. Such a result would conflict with the Congressional statutory aim to provide compensation for nuclear injuries.

The defense is therefore inconsistent with Congressional purpose and the PAA preempts the defense for that reason as well. Congress drafted a precise, comprehensive litigation scheme for injuries sustained in a nuclear incident. The federal courts have recognized this Congressional intent. *See O’Conner v. Commonwealth Edison Co.*, 13 F.3d 1090, 1099 (7th Cir. 1994); *In re TMI Litig. Cases*, 940 F.2d 832, 854-55 (3d Cir. 1991) (“*In re TMI Litig.*”). That scheme governs the conduct of this litigation. As the district court correctly concluded, “Congress has clearly spoken to the claims at issue in this case and its pronouncement, not a more gen-

eral court-created common law defense[,] should govern the resolution of the claims.” *In re Hanford Nuclear Reservation Litig.*, No. 91-3015, slip op. at 11 (E.D. Wash. Mar. 30, 2004).

Delete the last sentence of the first partial paragraph on slip op. 9820, the first partial paragraph on that page, the paragraph spanning slip op. 9820-21, and the first full paragraph on slip op. 9821. Substitute the following:

At the time this case was submitted for decision, the leading authority in this area was a district court opinion from the Southern District of New York. *In re Worldcom, Inc. Sec. Litig.*, 294 F. Supp. 2d 431, 451 (S.D.N.Y. 2003). The Sixth Circuit agreed with the reasoning of *Worldcom* and held that *American Pipe* tolling is not available to a plaintiff who files a separate action pending class certification. *Wyser-Pratte Mgmt. Co. v. Telxon Corp.*, 413 F.3d 553, 569 (6th Cir. 2005). So did the other district courts that dealt with the issue. *See, e.g., In re Heritage Bond Litig.*, 289 F. Supp. 2d 1132, 1150 (C.D. Cal. 2003); *see also Wyser-Pratte Mgmt. Co.*, 413 F.3d at 569 (citing cases).

The Second Circuit, however, has vacated the district court decision in *WorldCom*. *In re Worldcom Sec. Litig.*, 496 F.3d 245, 256 (2nd Cir. 2007). The Second Circuit has now held that *American Pipe* tolling does apply to plaintiffs who file their actions before a decision on class certification. The Second Circuit explained that applying *American Pipe* tolling to plaintiffs who filed individual suits before certification is consistent with the purpose underlying statutes of limitations. *Id.* at 255. Statutes of limitations are intended to provide notice to defendants of a claim before the underlying evidence becomes stale. As the Supreme Court held in *American Pipe*,

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however, the filing of a timely class action provides defendants with notice of the claim, so a follow-on individual suit cannot surprise defendants. *Id.*

The Second Circuit also reasoned that although the *American Pipe* doctrine protects plaintiffs from being forced to file suit before the certification decision, that doesn't mean that plaintiffs who file before certification are not entitled to tolling. *Id.* at 256. They have a right to file at the time of their choosing and denying tolling would diminish that right. We find the Second Circuit's reasoning persuasive and adopt it.

We therefore conclude that members of the plaintiff-class who have filed individual suits are entitled to the benefits of *American Pipe* tolling. This includes Bellwether Plaintiff, Wise.

On slip op. 9822, delete the first sentence of the first full paragraph and replace it with the following:

Although in *Berg* we referred to bodily injury as a jurisdictional prerequisite, *id.* at 1131-33, we used the term "jurisdictional" in the loose sense, perhaps too loose, to mean that medical monitoring claims were not compensable under the PAA absent physical injury.

On slip op. 9822, delete the last sentence of the first full paragraph, and substitute the following:

The district court in this case clearly had subject matter jurisdiction under the PAA to decide the issue; the district court simply did not have the power to grant the relief requested because the plaintiffs have not suffered any physical injury.

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On slip op. 9836, second full paragraph, delete the phrase “, and on statute of limitations grounds, the judgment in favor of Plaintiff Wise”. In the fifth sentence of that paragraph, replace the phrase “as well as the judgment in favor of Plaintiff Stanton” with “as well as the judgments in favor of Plaintiffs Stanton and Wise.”

Defendant-Appellants’ Petition for Rehearing En Banc, Defendant-Appellees’ Petition for Panel Rehearing, and Plaintiffs’ Petition for Panel Rehearing and Rehearing En Banc are denied.

No subsequent petition for rehearing or rehearing en banc may be filed.

OPINION

SCHROEDER, Circuit Judge:

I. Introduction.

The origins of this case trace back more than sixty years to the height of World War II when the federal government solicited Appellants E.I. DuPont de Nemours & Co., General Electric, Inc., UNC Nuclear Industries, Inc., Atlantic Richfield Co., and Rockwell International Corp., (collectively “Defendants”) to operate the Hanford Nuclear Weapons Reservation (“Hanford”) in southeastern Washington. The Hanford Reservation was a plutonium-production facility that helped make the atomic bomb that dropped on Nagasaki, Japan in World War II.

A regrettable Hanford byproduct was the radioiodine emitted into the surrounding area. The plaintiffs in this litigation are over two thousand residents who now claim that these emissions, known as I-131, caused various cancers and other

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life-threatening diseases. The first group of plaintiffs filed a complaint in 1990 under the federal statute governing nuclear accidents, the Price-Anderson Act (“PAA”), claiming they were entitled to damages for injuries arising from a nuclear incident pursuant to 42 U.S.C. § 2210. The history is discussed in our earlier opinions in *In re Hanford Nuclear Reservation Litigation*, 292 F.3d 1124 (9th Cir. 2002) (“*In re Hanford*”); and *Berg v. E.I. DuPont de Nemours & Co.*, 293 F.3d 1127 (9th Cir. 2002) (“*Berg*”). After almost two decades of litigation, which already has included two appeals to this court, the parties in 2005 agreed to a bellwether trial. The trial was designed to produce a verdict that would highlight the strengths and weaknesses of the parties’ respective cases and thus focused on six plaintiffs (“Plaintiffs”) who were representative of the larger group. The purpose of the trial was to promote settlement and bring long-overdue resolution to this litigation.

Before us on appeal is a litany of issues stemming from the bellwether trial. A threshold issue is whether Defendants may seek complete immunity under the common law government contractor defense, because they were operating Hanford at the request of the federal government. We hold that the defense is inapplicable as a matter of law, because Congress enacted the PAA before the courts recognized the government contractor defense, and the PAA provides a comprehensive liability scheme that precludes Defendants’ reliance on such a defense.

In the alternative, Defendants argue that even if they are not immune, they are not strictly liable for any I-131 emissions, because the amounts of the emissions were within federally-authorized levels; the plutonium-production process was not an abnormally dangerous activity that would create strict liability; and even if it were, Defendants qualify for the “public duty” exception to strict liability. The district court held that none of Defendants’ contentions were sufficient to

relieve them of strict liability for the injuries they caused. We agree.

With respect to the trial itself, the district court with admirable diligence ruled on many issues of first impression. We hold that under Washington law, the district court properly instructed the jury that to impose liability, it had to find Hanford was the “but for” cause of Plaintiffs’ diseases and not just a contributing cause under the more lenient “substantial factor” test. The court also made a host of evidentiary rulings that are before us on appeal. We hold that three of these rulings constitute reversible error with respect to three of the Bellwether Plaintiffs.

There are statute of limitations issues as well. We hold that any Hanford Plaintiffs who filed independent suits pending class certification are entitled to class action tolling.

Lastly, we hold that the district court properly dismissed any medical monitoring claims as not cognizable under the PAA. This is consistent with our decision in *Berg*, 293 F.3d 1127.

II. Background.

The United States government constructed Hanford during World War II to manufacture plutonium for military purposes. The facility was a component of the Army Corps of Engineer’s secret Manhattan Project, with the primary objective of developing an atomic bomb. In 1942, the Army Corps began hiring civilian contractors to help build and operate the Hanford facility. It first recruited the University of Chicago Metallurgical Laboratory (“Met Lab”) to design the process and equipment to produce plutonium. It then solicited E.I. DuPont de Nemours & Co. (“DuPont”) to actually run the facility. It is apparent the government itself did not have the expertise or resources to operate Hanford.

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DuPont initially refused. The government, however, persisted and implored DuPont to run the plutonium-production facility, because, as the government provided in DuPont's contract, the project was of the "utmost importance" and was "necessary in facilitating the prosecution of the war." DuPont eventually acquiesced, stating it would run the facility out of patriotic considerations. It accepted only one dollar as payment for its services. Several years later, the Hanford facility successfully produced the plutonium that was used in 1945 to drop the atomic bomb on Nagasaki and effectively end World War II. (The bomb dropped on Hiroshima was uranium-based, not plutonium-based).

As part of the plutonium-production process, the Hanford facility emitted I-131, a fission byproduct known as radioiodine. I-131 was known at the time to have potential adverse health effects on humans. Accordingly, the Met Lab scientists set tolerance doses for human exposure. For example, the Met Lab determined that the human thyroid should not absorb more than one rad per day for those individuals subject to continuous exposure in the area. A rad is a measurement of the amount of radioiodine absorbed into an organ or tissue. On the basis of these safe exposure limit estimates, the Met Lab approved a detailed operating procedure that would ensure that the plutonium was produced within those emission limits. The key to decreasing I-131 emissions was to allow for longer cooling times of the uranium slugs used to produce the plutonium. This strategy, however, often conflicted with the federal government's orders to increase plutonium production.

On September 1, 1946, DuPont transferred its duties to General Electric ("GE"), which also agreed to earn no profit from its work. GE ran the Hanford facility through the Cold War. During the period of its operation, GE asked the federal government to increase cooling times to allow for lower emissions of I-131. By this time, Congress had established the Atomic Energy Commission ("AEC"), *see* 42 U.S.C.

§§ 2011-2013 (1946), and GE was bound by its determinations. The AEC denied the request for longer cooling times, and GE continued to produce plutonium consistent with government demands. By the 1950s, however, significant improvements were made to the production process, and I-131 emission levels dropped.

In 1987, the United States Department of Energy (“DOE”) created the Hanford Environmental Dose Reconstruction Project (“HEDR”), overseen by the Center for Disease Control and Prevention. The underlying purpose of the HEDR was to estimate and reconstruct all radionuclide emissions from Hanford from 1944 to 1972 in order to ascertain whether neighboring individuals and animals had been exposed to harmful doses of radiation. Of particular concern to the HEDR were the estimated doses of I-131 received by the thyroid glands of humans, principally through consumption of milk from cows that ingested contaminated vegetation on neighboring farms and pastures. The HEDR concluded that I-131 emissions peaked during the period from 1944 to 1946, when an estimated 88% of Hanford’s total iodine emissions occurred. HEDR explained that in later years, emissions declined because of technological advances. In 1990, the Technical Steering Panel of HEDR released a report entitled Initial Hanford Radiation Dose Estimates that publicly disclosed for the first time that large quantities of radioactive and non-radioactive substances had been released from Hanford, beginning in the 1940s.

This disclosure sparked a blaze of litigation. Thousands of plaintiffs filed suit pursuant to the Price-Anderson Act, 42 U.S.C. § 2210(n)(2), which had been amended in 1988 to provide exclusive federal jurisdiction over all claims arising from a nuclear incident, otherwise known as public liability actions. The PAA allowed the plaintiffs to sue private parties, such as DuPont, and to consolidate the claims in federal district court. *Id.* While Congress wanted to ensure that victims of nuclear incidents recovered compensation, it also included govern-

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ment indemnification provisions in the PAA to give private parties an incentive to participate in the nuclear industry. *See, e.g., S. REP. NO. 100-70, at 14 (1988), reprinted in 1988 U.S.C.C.A.N. 1424, 1425-26.*

The PAA provides that although federal courts have exclusive and original jurisdiction over claims stemming from nuclear incidents, the substantive rules of decision are provided by the law of the state in which the nuclear incident occurs. *See* 42 U.S.C. § 2014(hh). Plaintiffs therefore brought tort claims under Washington law, asserting that because Defendants were engaged in an abnormally dangerous activity, they were strictly liable for any Hanford-caused radiation illness.

On August 6, 1990, a group of plaintiffs filed a joint consolidated complaint in the Eastern District of Washington, alleging a class action against Defendants. In 1991, the district court consolidated any and all Hanford-related actions pending in various courts, directed preparation of one consolidated complaint, and designated specific lead counsel for all parties. In an order dated September 22, 1994, the district court addressed the issue of class certification and decided to reserve decision under Federal Rule of Civil Procedure 23(b)(3) pending further discovery on causation issues.

Accordingly, pending class certification, the litigation proceeded as a consolidated action. Throughout this period, the district court entertained a handful of dispositive motions, which led to two appeals to this court. In 2002, we heard *In re Hanford*, 292 F.3d 1124, challenging the district court's dismissal of plaintiffs who could not establish they received a "doubling dose" of radiation. We held that Plaintiffs' claims should proceed even if they could not show that Hanford radiation doubled their risk of illness, and we remanded for trial. *Id.* at 1139.

We also heard the appeal in the related case, *Berg*, 293 F.3d 1127. The *Berg* plaintiffs had not yet suffered from any ill-

ness, but sued Defendants for medical monitoring. We held that medical monitoring claims were not compensable under the PAA and upheld the district court's dismissal of those actions with prejudice. *Id.* at 1133.

After our decisions in *In re Hanford* and *Berg*, Judge William Fremming Nielsen steered the case toward resolution. The parties agreed to proceed with a bellwether trial, hoping it would reveal the strengths and weaknesses of their respective cases and thus pave the way for a settlement. The parties eventually agreed on twelve bellwether plaintiffs. Six of these plaintiffs had their claims dismissed on dispositive, pre-trial motions. The remaining six plaintiffs went to trial in April 2005.

The Bellwether Plaintiffs represent plaintiffs who suffer from various thyroid diseases they claim were caused by radiation emanating from Hanford. Plaintiffs Gloria Wise and Steven Stanton have thyroid cancer. Plaintiffs Wanda Buckner, Shirley Carlisle, and Kathryn Goldbloom suffer from hypothyroidism, a condition that slows the body's metabolism. Hypothyroidism is most frequently caused by Hashimoto's disease, an illness that Plaintiffs claim was caused by Hanford radiation. Plaintiff Shannon Rhodes suffers from lung cancer, which her doctors concluded was a form of Hurthle cell thyroid cancer that had metastasized from a thyroid lobe previously removed.

Prior to trial, the Bellwether Plaintiffs made several motions to strike Defendants' affirmative defenses. Defendants first claimed that the government contractor defense insulated them from all liability. The district court, in an unpublished 2003 order, struck the defense under Federal Rule of Civil Procedure 12(b), holding that the PAA displaced any such defense as a matter of law. In a published order, the court also ruled that plutonium production at Hanford was an abnormally dangerous activity warranting strict liability under Washington law. *In re Hanford Nuclear Res. Litig.*, 350 F.

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Supp. 2d 871, 888 (E.D. Wash. 2004). It then limited the issues at trial to causation and damages. *Id.*

The primary dispute at trial was whether the amount of radiation to which each plaintiff was exposed was sufficient to be the cause-in-fact of his or her thyroid disease. There was extensive testimony that I-131 radiation causes Hashimoto's disease, a cause of hypothyroidism, and that I-131 can also be a contributing factor to thyroid cancer. The testimony revealed, however, that to date epidemiological studies can establish only that radiation of at least 100 rads is a contributing factor to thyroid illness. Some epidemiological studies hypothesize that 40 rads might cause Hashimoto's disease, but there are no data beyond that threshold.

Because many Plaintiffs were not exposed to radiation above 40 rads, and no Plaintiff was exposed to radiation above 100 rads, Plaintiffs had to present expert testimony that scientific extrapolation permitted a finding of causation below 40 rads. Their primary experts were Dr. Terry Davies, an endocrinologist, Dr. Sara Peters, a pathologist, Dr. F. Owen Hoffman, a causation expert, and Dr. Colin Hill, a radiation cell biologist. Plaintiffs also proffered the expert testimony of epidemiologist Dr. A. James Rutenber, but key parts of his testimony relating to causation were excluded.

After fourteen days of trial and four days of deliberations, the jury found in favor of two plaintiffs, Steve Stanton and Gloria Wise; the jury hung with respect to one plaintiff, Shannon Rhodes; and it found in favor of Defendants with respect to the remaining three plaintiffs, Wanda Buckner, Shirley Carlisle, and Kathryn Goldbloom. As damages for prevailing plaintiffs, the jury awarded Stanton \$227,508 and Wise \$317,251. Because the jury could not reach a verdict with respect to Plaintiff Rhodes, the district court declared a mistrial. Rhodes re-tried her claims in front of a second jury in November 2005, and the jury entered a defense verdict on all counts.

Rhodes, along with the three non-prevailing plaintiffs in the first trial, appeal a variety of evidentiary rulings, as well as the district court's jury instruction that under Washington law Plaintiffs had to prove "but-for" causation, rather than "substantial factor" causation. Defendants appeal the judgments entered in favor of the two prevailing plaintiffs, claiming the district court erred as a matter of law in striking the government contractor defense. In the alternative, Defendants argue that Plaintiffs may not proceed under a strict liability theory, because the I-131 emissions were within federally-authorized levels. They also contend the plutonium-production process was not an abnormally dangerous activity under Washington law and, even if it were, that Defendants qualify for the narrow "public duty" exception to strict liability.

Defendants also contend that prevailing Plaintiff Wise's suit was untimely under Washington's statute of limitations. See *Am. Pipe & Constr. Co. v. Utah*, 414 U.S. 538 (1974). Wise had filed an independent action in 1997, likely beyond the statutory period, but Defendants did not invoke *American Pipe* and the district court allowed Wise's claim to proceed as part of the pending class action.

Apart from the issues relating to the Bellwether Plaintiffs, Plaintiffs Pamela Durfey, Paulene Echo Hawk, and Dorothy George, who do not yet have symptoms of any thyroid disease, sued Defendants for the costs of medical monitoring. The district court, following this court's decision in *Berg*, 293 F.3d at 1132-33, held that the PAA precluded any medical monitoring claims that were unaccompanied by physical injury. Rather than remanding those claims to state court, however, the district court held that the PAA bestowed exclusive jurisdiction in the federal courts for claims arising from a nuclear incident, and that therefore the PAA's provisions preempted any state-derived medical monitoring claim. Accordingly, it directed entry of final judgment for DuPont under Federal Rule of Civil Procedure 54(b). The plaintiffs appeal this dismissal.

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III. The Government Contractor Defense.

The overarching issue before us is Defendants' contention that the government contractor defense is available to them as a matter of law and that it provides complete immunity from liability if its substantive requirements are satisfied. The district court held that the affirmative defense was inapplicable as a matter of law because the provisions of the PAA cannot be reconciled with the defense and implicitly displace it. We review *de novo* the district court's conclusion that the affirmative defense is unavailable, *United States v. Griffin*, 440 F.3d 1138, 1143 (9th Cir. 2006), and we reach the same conclusion.

[1] The government contractor defense is by now an established component of federal common law, but it was first recognized by the Supreme Court less than twenty years ago in *Boyle v. United Techs. Corp.*, 487 U.S. 500 (1988). The defense is intended to implement and protect the discretionary function exception of the Federal Tort Claims Act ("FTCA"), 28 U.S.C. § 2680(a), which was enacted after World War II. The defense allows a contractor-defendant to receive the benefits of sovereign immunity when a contractor complies with the specifications of a federal government contract. *Boyle*, 487 U.S. at 511-12. As the Court said in *Boyle*, "[i]t makes little sense to insulate the Government against financial liability for the judgment that . . . equipment is necessary when the Government produces the equipment itself, but not when it contracts for the production." *Id.* at 512.

As a threshold matter, we agree with Defendants that the government contractor defense applies not only to claims challenging the physical design of a military product, but also to the process by which such equipment is produced. Accordingly, a contractor who agrees to operate a production facility pursuant to government specifications may qualify for the defense.

The issue here, however, is whether the PAA preempts reliance on the common law doctrine, either because the defense contradicts the federal statute or because the statute predates the defense. Congress is presumed to “legislate against a background of common-law adjudicatory principles.” *Astoria Fed. Sav. & Loan Ass’n v. Solimino*, 501 U.S. 104, 108 (1991). A federal statute enacted after a common law doctrine has been established will not therefore abrogate the federal common law rule unless the statute speaks directly to the question addressed by common law. *United States v. Texas*, 507 U.S. 529, 534 (1993). This is because “where a common-law principle is well established . . . the courts may take it as given that Congress has legislated with an expectation that the principle will apply except when a statutory purpose to the contrary is evident.” *Astoria*, 501 U.S. at 108 (internal quotations and citations omitted) (holding that the court should assume Congress drafted the Age Discrimination in Employment Act with the common law administrative estoppel doctrine in mind); see also *Pasquantino v. United States*, 544 U.S. 349, 359 (2005).

[2] Whether the PAA preempts the government contractor defense is therefore a two-step inquiry. We must first determine whether the government contractor defense was well-established at the time Congress enacted the operative version of the PAA. If so, we must determine whether a statutory purpose contrary to the government contractor defense is evident.

The defense fails the first inquiry. Defendants are not entitled to the government contractor defense, because the statute predates clear judicial recognition of any such defense. In addition, the statute’s comprehensive liability scheme is patently inconsistent with the defense and precludes its operation in this case.

[3] The Supreme Court’s decision in *Boyle* was filed on June 27, 1988. Less than two months later, the PAA was amended, on August 20, 1988, to include the pertinent lan-

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guage establishing exclusive federal jurisdiction for all public liability claims arising from nuclear incidents. While the government contractor defense was technically a recognized common law principle at the time Congress enacted the PAA, it was hardly a well-established doctrine. *See Astoria*, 501 U.S. at 108. (noting that courts should presume Congress legislated with an expectation that a common law doctrine would apply only if the common-law principle was well-established). Congress did not have the benefit of any well-established common law principles relating to the government contractor defense when Congress drafted the relevant provisions of the PAA. The Supreme Court defined the defense only a few weeks before the PAA was signed into law.

The origins of the defense in the cases antecedent to *Boyle* do not materially affect this analysis. In 1940, the Supreme Court arguably planted the seeds of the government contractor defense in *Yearsley v. W.A. Ross Constr. Co.*, 309 U.S. 18, 20-21 (1940). It held that an agent of the government could not be held liable under the Takings Clause for the defective construction of a dam that damaged land, as long as the agent followed government specifications for the dam's construction. The Court limited the applicability of the defense to principal-agent relationships where the agent had no discretion in the design process and completely followed government specifications. Nothing in *Yearsley* extended immunity to military contractors exercising a discretionary governmental function. *See Boyle*, 487 U.S. at 524-25 (J. Brennan, dissenting) (*Yearsley* is "a slender reed on which to base so drastic a departure from precedent" . . . "[It] has never been read to immunize the discretionary acts of those who perform service contracts for the Government").

While some circuit courts began extending the *Yearsley* doctrine to military contractors as early as the 1960s, *see McKay v. Rockwell Int'l Corp.*, 704 F.2d 444, 448-49 (9th Cir. 1983) (citing cases), other circuits held that *Yearsley* was clearly limited to principal-agent relationships and did not

apply to military contractors, *see, e.g., Bynum v. FMC Corp.*, 770 F.2d 556, 564 (5th Cir. 1985). In light of the conflicting authority on the matter, it is clear that neither the scope nor the contours of the defense were well-defined until the Supreme Court's 1988 decision in *Boyle*. We therefore conclude that the government contractor defense was not judicially well-established at the time Congress enacted the PAA.

Because Congress did not enact the PAA against a backdrop of well-established common law principles that included the government contractor defense, we cannot grant immunity from liability.

Defendants argue that even if the doctrine was not judicially well-established, Congress passed the 1988 amendments to the Act with the defense in mind and intended that it apply. The defendants point to a provision in the PAA relating to underground detonation. The provision is 42 U.S.C. § 2210(d)(7), which states as follows:

A contractor with whom an agreement of indemnification has been executed under paragraph (1)(A) and who is engaged in activities connected with the underground detonation of a nuclear explosive device shall be liable, to the extent so indemnified under this subsection, for injuries or damage sustained as a result of such detonation in the same manner and to the same extent as would a private person acting as principal, and no immunity or defense founded in the Federal, State, or municipal character of the contractor or of the work to be performed under the contract shall be effective to bar such liability.

Defendants contend the provision demonstrates that Congress intended to eliminate the modern government contractor defense for underground detonation and further contend that the provision demonstrates Congress intended the government

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contractors defense as we know it today to apply to all other claims arising out of nuclear incidents.

The language of § 2210(d)(7) is not clear. It refers to “immunity or defense” founded on the “character of the contractor or of the work.” It thus appears to be referring to traditional sovereign immunity from any liability rather than the more sophisticated principles of accountability that underlie modern exceptions of governmental tort liability. *See* Federal Tort Claims Act, 28 U.S.C. § 2680(a); *Boyle*, 487 U.S. at 512.

Even assuming, however, that Congress intended to ensure that the modern defense did not apply to underground detonation claims, it does not follow that Congress also intended, without saying so, that the defense would apply in all other situations. Such a result would conflict with the Congressional statutory aim to provide compensation for nuclear injuries.

The defense is therefore inconsistent with Congressional purpose and the PAA preempts the defense for that reason as well. Congress drafted a precise, comprehensive litigation scheme for injuries sustained in a nuclear incident. The federal courts have recognized this Congressional intent. *See O’Conner v. Commonwealth Edison Co.*, 13 F.3d 1090, 1099 (7th Cir. 1994); *In re TMI Litig. Cases*, 940 F.2d 832, 854-55 (3d Cir. 1991) (“*In re TMI Litig.*”). That scheme governs the conduct of this litigation. As the district court correctly concluded, “Congress has clearly spoken to the claims at issue in this case and its pronouncement, not a more general court-created common law defense[,] should govern the resolution of the claims.” *In re Hanford Nuclear Reservation Litig.*, No. 91-3015, slip op. at 11 (E.D. Wash. Mar. 30, 2004).

[4] Congress enacted the PAA with twin goals in mind: to provide an incentive to contractors to participate in the nuclear industry by limiting their liability, and to compensate victims of nuclear accidents. *See, e.g.*, Pub. L. No. 100-408,

102 Stat. 1066 (1988); S. REP. NO. 100-218, at 4-13 (1987), *reprinted in* 1988 U.S.C.C.A.N. 1476, 1479-88. The Act placed Plaintiffs' state law claims in federal court and provided indemnification of Defendants from the federal government for any liability to victims of nuclear incidents. *See* 42 U.S.C. § 2210; S. REP. NO. 100-218, at 13, *reprinted in* 1988 U.S.C.C.A.N. at 1484, 1488. To allow those entitled to indemnity as government contractors to disclaim any liability because they are government contractors would be inconsistent with the goal of the PAA to provide compensation to victims of nuclear incidents. We will not assume that in enacting the PAA's comprehensive scheme, Congress intended, yet failed to state in the Act, that victims of nuclear incidents cannot recover tort damages from nuclear operators when the operators were pursuing government goals. Accordingly, we hold that the government contractor defense is inapplicable as a matter of federal law and affirm the district court's ruling on this key issue.

IV. Strict Liability.

Defendants next argue that the district court erred as a matter of Washington state law in holding Defendants strictly liable for any I-131 emissions from the Hanford facility. Defendants challenge that ruling on three grounds: (1) that strict liability pursuant to Washington state law may not be imposed under the PAA if Defendants released I-131 within federally-authorized emission levels; (2) even if state liability law applies, the Hanford activity did not meet the "abnormally dangerous activity" test that warrants strict liability; and (3) even if Washington courts would apply a strict liability regime, Defendants would be exempted under the "public duty" exception that applies generally to heavily regulated entities doing potentially hazardous work. For the reasons below, we affirm the district court's imposition of strict liability.

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A. *Federally-Authorized Emissions.*

[5] It is not disputed that the federal government is in charge of nuclear safety. “[T]he safety of nuclear technology [is] the exclusive business of the Federal Government,” which has “occupied the entire field of nuclear safety concerns.” *Koller v. Pinnacle West Capital Corp.*, 2007 U.S. Dist. LEXIS 9186 (D. Ariz. Feb. 7, 2007) (second alteration in original) (quoting *Pac. Gas Elec. Co. v. State Energy Res. Conservation & Dev. Comm’n*, 461 U.S. 190, 208, 212 (1983)). Every federal circuit that has considered the appropriate standard of care under the PAA has concluded that nuclear operators are not liable unless they breach federally-imposed dose limits. See, e.g., *O’Conner*, 13 F.3d at 1105; *In re TMI Litig.*, 940 F.2d at 859; *Roberts v. Fla. Power & Light Co.*, 146 F.3d 1305, 1308 (11th Cir. 1998); *Nieman v. NLO, Inc.*, 108 F.3d 1546, 1553 (6th Cir. 1997).

[6] Defendants are thus correct insofar as they point out that the clear weight of authority supports the principle that federal law preempts states from imposing a more stringent standard of care than federal safety standards. Strict liability may not be imposed for I-131 releases within federally-authorized limits, because any federal authorization would preempt state-derived standards of care. To allow a jury to decide on the basis of a state’s reasonableness standard of care would “put juries in charge of deciding the permissible levels of radiation exposure and, more generally, the adequacy of safety procedures at nuclear plants—issues that have explicitly been reserved to the federal government.” *In re TMI Gen. Publ. Utils. Corp.*, 67 F.3d 1103, 1115 (3d Cir. 1995) (citing *Pacific Gas*, 461 U.S. at 212). This result would undermine the purpose of a comprehensive and exclusive federal scheme for nuclear incident liability.

Defendants then go further, however, and argue that the district court in this case permitted the jury to substitute its view of a reasonable emission standard for a government

standard. The problem with Defendants' argument is that no federal standards governing emission levels existed at the time of the I-131 emissions. Defendants try to remedy this problem by pointing to "tolerance doses" recommended and implemented by military and government scientists working on the Hanford project and ask us to equate such recommendations with federally-authorized emission levels. They are not the same.

These tolerance doses, although established under the aegis of the United States Army, did not carry the force of law and thus cannot provide the basis for a safe harbor from liability. They amounted to no more than site-specific safety rules. The United States Army instructed the Manhattan Engineering District to set forth standard, internal operating procedures for the plutonium-production process at Hanford. The tolerance doses were part of these procedures. The Met Lab scientists calculated what they thought were the outer limits of safe exposure at the plant. These internal guidelines were, however, exactly and only what they claimed to be: internal. They were not comprehensive, federal standards governing emission levels on which Defendants could rely to relieve them from liability for harm they caused.

Defendants are correct that it would not have been possible for an agency to establish emission levels in the early 1940s, because the Atomic Energy Act was not enacted until 1954 and the Nuclear Regulatory Commission was created in 1974. In fact, the emissions occurred even prior to the enactment of the Administrative Procedure Act in 1946. This history, however, undermines Defendants' position, because it highlights the absence of any federal machinery to promulgate legal standards on which Defendants could have reasonably relied to insulate them from liability to those living and breathing twenty-four hours a day in the area surrounding Hanford. The need for such standards was not recognized until many years later.

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B. Abnormally Dangerous Activity.

Defendants next argue that even if state law standards apply in this case, the district court erred by holding that Washington tort law would impose strict liability. Specifically, Defendants contend that operating the Hanford facility does not constitute an “abnormally dangerous activity” under Washington law. We review *de novo* the question of whether an activity is abnormally dangerous, *Langan v. Valicopters, Inc.*, 567 P.2d 218, 221 (Wash. 1977), and we affirm.

Washington has adopted the Restatement (Second) of Torts, sections 519 and 520, which outline the strict liability regime for abnormally dangerous activities. *Klein v. Pyrodyne Corp.*, 810 P.2d 917, 920 (Wash. 1991); *New Meadows Holding Co. v. Wash. Water Power Co.*, 687 P.2d 212, 215 (Wash. 1984). Section 519 provides:

- (1) One who carries on an abnormally dangerous activity is subject to liability for harm to the person, land, or chattels of another resulting from the activity, although he has exercised the utmost care to prevent such harm.
- (2) Such strict liability is limited to the kind of harm, the risk of which makes the activity abnormally dangerous.

Section 520 lists the factors to be used when determining what constitutes an abnormally dangerous activity:

- (a) Whether the activity involves a high degree of risk of some harm to the person, land or chattels of another;
- (b) Whether the gravity of the harm which may result from it is likely to be great;

- (c) Whether the risk cannot be eliminated by the exercise of reasonable care;
- (d) Whether the activity is not a matter of common usage;
- (e) Whether the activity is inappropriate to the place where it is carried on; and
- (f) The value of the activity to the community.

RESTATEMENT (SECOND) OF TORTS §§ 519-20 (1977). A court does not have to weigh each of the elements listed in § 520 equally. *Langan*, 567 P.2d at 221. One factor, alone, however, is generally not sufficient to find an activity abnormally dangerous. *Id.*

[7] Defendants argue that at the time of the emissions in the 1940s, they did not know the risks that were attributable to radioiodine exposure, and therefore § 520's factors (a)-(c) cannot be weighed against them. Any possible injury from radiation, however, need not have been actually known by Defendants at the time of exposure in order to impose strict liability. Under Washington law, if the actual harm fell within a general field of danger which should have been anticipated, strict liability may be appropriate. Whether an injury should have been anticipated does not depend on whether the particular harm was actually expected to occur. *Koker v. Armstrong Cork, Inc.*, 804 P.2d 659, 667-68 (Wash. Ct. App. 1991). It is sufficient that "the risk created [be] so unusual, either because of its magnitude or because of the circumstances surrounding it. . . ." *Langan*, 567 P.2d at 221.

[8] There is no question that Defendants should have anticipated some of the many risks associated with operating a nuclear facility, creating plutonium, and releasing I-131 into the atmosphere. It is exactly because of these risks, and the potential exposure to liability arising from them, that the gov-

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ernment contracted with Defendants to limit liability in case of an accident. For these same reasons, the Met Lab scientists recommended dosage limits.

[9] We agree with the district court that Defendants' conduct at Hanford was an abnormally dangerous activity under the § 520 factors. There was a high degree of risk to people and property associated with the Hanford facility and the gravity of any harm was likely to be great. *See* RESTATEMENT (SECOND) OF TORTS § 520. Regardless of Defendants' efforts to exercise reasonable care, some I-131 would be released, and developing plutonium is hardly an activity of common usage. While the value to the community at large, i.e., the nation, of developing an atomic bomb was perceived as high and there is pragmatically no very appropriate place to carry on such an activity, the § 520 factors on balance support holding that Defendants' activities were abnormally dangerous.

C. Public Duty Exception to Strict Liability.

Defendants' final defense is that even if their conduct constituted an abnormally dangerous activity, they are exempted from strict liability under Washington law pursuant to the "public duty" exception. *See* RESTATEMENT (SECOND) OF TORTS § 521. While this issue presents a close question, we conclude that Defendants do not qualify for the exception.

Section 521 of the Restatement provides:

The rules as to strict liability for abnormally dangerous activities do not apply if the activity is carried on in pursuance of a public duty imposed upon the actor as a public officer or employee or as a common carrier.

Id. As a threshold matter, Washington courts have not yet adopted § 521. We must therefore decide what the Washington Supreme Court would likely do if confronted with the

issue. *See NLRB v. Calkins*, 187 F.3d 1080, 1089 (9th Cir. 1999). We hold that the court would likely adopt the public duty exception.

Although they have never explicitly adopted § 521, Washington courts have adopted § 519, which governs abnormally dangerous activities generally. The comments to § 519 indicate that the public duty exception is part and parcel of strict liability. Comment “a” to § 519 states that “[t]he general rule stated in this Section is subject to exceptions and qualifications, too numerous to be included within a single section. It should therefore be read together with §§ 520 to 524A, by which it is limited.” RESTATEMENT (SECOND) OF TORTS, § 519 cmt. a. Comment “d” further limits the scope of strict liability and states that persons are accountable only for abnormally dangerous activities they undertake “for [their] own purposes.” *Id.* § 519 cmt. d. A key corollary to this point is that strict liability does not apply to activities carried on in pursuance of a public duty the actor was legally obligated to perform. *See id.* § 521.

Although Washington could adopt § 519 without adopting the numerous exceptions found in §§ 521-524A, it is unlikely that it would do so. Washington adopted wholesale the abnormally dangerous activity doctrine and its exceptions when they existed in the First Restatement. *See, e.g., Epperly v. Seattle*, 399 P.2d 591, 595 (Wash. 1965); *Foster v. Preston Mill Co.*, 268 P.2d 645, 647 (Wash. 1954). Furthermore, of the states that have adopted §§ 519-20, the vast majority has also adopted the subsequent exceptions.

[10] Although widely adopted, the courts that have applied the public duty exception have generally done so only to the extent a defendant was legally required to perform the ultrahazardous activity. *See* RESTATEMENT (SECOND) OF TORTS, § 521, cmt. a. The Washington Supreme Court’s decision in *Siegler v. Kuhlman*, 502 P.2d 1181 (Wash. 1972), supports such an application of the public duty doctrine here. The

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defendants in *Siegler* were a trucking company for Texaco and its driver, and the company was not legally obligated as a common carrier to carry materials that eventually caused an explosive, fatal accident on a highway. The Washington court held that the activity was abnormally dangerous and that the defendants could be held strictly liable for the accident. It is therefore most likely that the Washington Supreme Court would apply strict liability when the defendant was performing a dangerous activity for “his own purpose,” and would apply the public duty exception only in the appropriate case when the defendant was engaged in a legally-obligated activity, such as a regulated common carrier bound to carry hazardous substances.

Defendants argue that in light of the exceptional and patriotic circumstances under which they operated Hanford, we should treat them as analogous to public employees who would qualify for the exception. Although Defendants are correct that we generally do not parse the language of a restatement as meticulously as that of a statute, and we will apply it “when the purposes it seeks to serve dictate its application,” *McKay*, 704 F.2d at 447, Defendants do not satisfy the exception’s purpose in this case. Defendants are not public officers or employees or common carriers, *see* RESTATEMENT (SECOND) OF TORTS § 521, and they were not legally obligated to operate Hanford.

The prototypical example of a defendant entitled to the public duty exception is a utility company that is legally required to transport an ultrahazardous good, such as electricity, and causes injury to someone during transport. Courts have recognized a public duty exception in such cases, because common carriers must accept, carry, and deliver all goods offered to them for transport within the scope of the operating authority set forth in their permits. *See, e.g.*, 16 U.S.C. § 824 *et. seq.* (granting the Federal Energy Regulatory Commission authority to establish guidelines for common carriers of electricity in interstate commerce); *United States v.*

W. Processing Co., 756 F. Supp. 1416, 1421 (W.D. Wash. 1991). They cannot discriminate against customers or refuse to accept commodities that may be dangerous for transport. *Id.*

[11] The case law therefore illustrates that the duty involved is the legal obligation to perform the abnormally dangerous activity in accordance with government orders. *See, e.g., EAC Timberlane v. Pisces, Ltd.*, 745 F.2d 715, 721 n.12 (1st Cir. 1984) (noting that the public duty must be one imposed on the actor) (citing *Actiesselskabet Ingrid v. Central R.R. Co. of New Jersey*, 216 F. 72 (2d Cir. 1914); *Town of East Troy v. Soo Line R.R. Co.*, 409 F. Supp. 326, 329 (E.D. Wis. 1976) (no strict liability for spillage of carbolic acid by derailment of common carrier train); *Christ Church Parish v. Cadet Chem. Corp.*, 199 A.2d 707, 708-09 (Conn. Super. Ct. 1964) (transportation of twenty tons of various chemical substances); *Pecan Shoppe of Springfield v. Tri-State Motor Transit Co.*, 573 S.W.2d 431, 438-39 (Mo. Ct. App. 1978) (transporter of explosives); *Pope v. Edward M. Rude Carrier Corp.*, 75 S.E.2d 584, 595-96 (W. Va. 1953) (transporter of explosives). Qualifying entities must be operating pursuant to the mandate and control of the government; they must have little discretion over the manner in which they conduct their activities. *See Actiesselskabet Ingrid*, 216 F. at 78 (“It certainly would be an extraordinary doctrine for courts . . . to say that a common carrier is under legal obligation to transport dynamite and is an insurer against any damage which may result in the course of transportation, even though it has been guilty of no negligence which occasioned the explosion which caused the injury.”); *Pope*, 75 S.E. 2d at 591-92 (holding no strict liability for common carrier transport of explosives); *but see Lamb v. Martin Marietta Energy Sys., Inc.*, 835 F. Supp. 959 (W.D. Ky. 1993) (applying the public duty exception to a nuclear facility because under Kentucky law the public duty exception includes entities engaged in activities of public necessity even when there is no legal duty to perform them).

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[12] There was no government mandate here. The events giving rise to this litigation occurred before the government developed rules or the ability to control nuclear facilities. The government was relying on the expertise of defendants and not vice versa.

[13] We should not confuse the legal concept of a public duty with popular notions of patriotic duty taken at personal sacrifice. Defendants may well have been acting at the government's urging during wartime. The public duty exception, however, was developed under state law in recognition of the need to protect private actors who are legally required to engage in ultrahazardous activities. No matter how strongly Defendants may have felt a patriotic duty, they had no legal duty to operate Hanford, and they are, therefore, not entitled to the public duty exception. The district court correctly found defendants subject to strict liability.

V. *Statute of Limitations.*

A. *Waiver.*

Defendants argue for the first time on appeal that Bellwether Plaintiff Gloria Wise's lawsuit was untimely, because pursuant to *Am. Pipe & Constr. Co. v. Utah*, 414 U.S. 538 (1974), Wise lost the benefit of any statute of limitations tolling when she filed a separate, individual suit prior to the denial of class certification. Defendants arguably have waived this claim, because they did not raise the issue below sufficiently for the district court to rule on the matter. *McMillan v. United States*, 112 F.3d 1040, 1047 (9th Cir. 1997); *In re E.R. Fegert, Inc.*, 887 F.2d 955, 957 (9th Cir. 1989). We have discretion, however, to overlook any waiver. *See United States v. Bynum*, 327 F.3d 986, 990 (9th Cir. 2003). We exercise such discretion in this case, because the issue of whether Wise's lawsuit was tolled pending class certification is a purely legal question, *see id.*; both parties concede that the issue is "important," and addressing the issue is consistent

with the purpose of a bellwether trial in clarifying and streamlining the relevant issues. The issue should therefore be settled now.

We recognize that the results of the Hanford bellwether trial are not binding on the remaining plaintiffs. *See, e.g., In re Hanford Nuclear Res. Litig.*, No. 91-03015, Dkt. #1294 at 164-65 (E.D. Wash. June 3, 2003). Nevertheless, according to counsel for the parties, the purpose of the bellwether trial was to “establish the relative strengths and weaknesses of the parties, spread out mainly for settlement purposes. . . .” *Id.* at 155, 165. The bellwether trial was meant to be a “learning process.” *Id.* at 161. The parties also state in their briefs that there are “numerous” other plaintiffs who face a similar statute of limitations hurdle. It would defeat the purpose of a bellwether trial and only deter settlement longer to refrain from deciding this purely legal issue at the earliest possible stage. Our resolution will save any potentially time-barred plaintiffs from expending additional resources and energy on futile legal proceedings.

B. Application of American Pipe.

In April 1994, the Hanford plaintiffs moved for class certification. The district court reserved ruling on certification under the opt-out provision of Federal Rule of Civil Procedure 23(b)(3). Plaintiffs eventually withdrew their request for certification, but not until May 2003, after the first series of appeals was decided by this circuit. Accordingly, the district court held that the statute of limitations was tolled for all putative class members from April 1994 until May 2003.

Plaintiff Wise was diagnosed with thyroid cancer in April 1993, three years after the first class action complaints were filed and one year before Plaintiffs moved for class certification. Wise filed an individual suit in district court in July 1997. If the date of diagnosis is the triggering date for the statute of limitations, her individual suit was apparently

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untimely, because Washington's statute of limitations for personal injury claims is three years. Wise's suit would have been timely only if she was entitled to the tolling that began for the class action plaintiffs on April 15, 1994. Defendants now contend that Wise forfeited these tolling benefits when she filed her individual suit prior to the district court granting or denying class certification. Wise contends she is entitled to tolling as a member of the class pursuant to *American Pipe*.

[14] In *American Pipe*, 414 U.S. at 554, the Supreme Court held that the commencement of a class action suspends the applicable statute of limitations as to all asserted members of the class who would have been parties had the suit been permitted to continue as a class action. *Id.* The tolling period ends, and the statute runs anew, once class certification is granted or denied. *Tosti v. City of Los Angeles*, 754 F.2d 1485, 1488 (9th Cir. 1985). The issue in this case, which is one of first impression in our circuit, is whether *American Pipe* also permits tolling for a plaintiff who files a separate action pending class certification.

The Sixth Circuit, which is the only circuit to have addressed the issue directly, has also said no. It held that the purposes of class action tolling under *American Pipe* "are not furthered when plaintiffs file independent actions before decision on the issue of class certification." *Wyser-Pratte Mgmt. Co., Inc. v. Telxon*, 413 F.3d 553, 569 (6th Cir. 2005). Such purposes are only furthered "when plaintiffs delay until the certification issue has been decided." *Id.* The Second Circuit tangentially reached a similar conclusion two decades earlier, when it stated that "[t]he policies behind Rule 23 and *American Pipe* would not be served, and in fact would be disserved, by guaranteeing a separate suit at the same time that a class action is ongoing." *Glater v. Eli Lilly & Co.*, 712 F.2d 735, 739 (1st Cir. 1983). Countless federal district courts have come to the similar conclusion that "[a]pplying the tolling doctrine to separate actions filed prior to class certification would create the very inefficiency that *American Pipe* sought

to prevent.” *In re Worldcom, Inc. Sec. Litig.*, 294 F. Supp. 2d 431, 451 (S.D.N.Y. 2003) (citing cases); *see also In re Heritage Bond Litig.*, 289 F. Supp. 2d 1132, 1150 (C.D. Cal. 2003).

At the time this case was submitted for decision, the leading authority in this area was a district court opinion from the Southern District of New York. *In re Worldcom, Inc. Sec. Litig.*, 294 F. Supp. 2d 431, 451 (S.D.N.Y. 2003). The Sixth Circuit agreed with the reasoning of *Worldcom* and held that *American Pipe* tolling is not available to a plaintiff who files a separate action pending class certification. *Wyser-Pratte Mgmt. Co. v. Telxon Corp.*, 413 F.3d 553, 569 (6th Cir. 2005). So did the other district courts that dealt with the issue. *See, e.g., In re Heritage Bond Litig.*, 289 F. Supp. 2d 1132, 1150 (C.D. Cal. 2003); *see also Wyser-Pratte Mgmt. Co.*, 413 F.3d at 569 (citing cases).

[15] The Second Circuit, however, has vacated the district court decision in *WorldCom*. *In re Worldcom Sec. Litig.*, 496 F.3d 245, 256 (2nd Cir. 2007). The Second Circuit has now held that *American Pipe* tolling does apply to plaintiffs who file their actions before a decision on class certification. The Second Circuit explained that applying *American Pipe* tolling to plaintiffs who filed individual suits before certification is consistent with the purpose underlying statutes of limitations. *Id.* at 255. Statutes of limitations are intended to provide notice to defendants of a claim before the underlying evidence becomes stale. As the Supreme Court held in *American Pipe*, however, the filing of a timely class action provides defendants with notice of the claim, so a follow-on individual suit cannot surprise defendants. *Id.*

The Second Circuit also reasoned that although the *American Pipe* doctrine protects plaintiffs from being forced to file suit before the certification decision, that doesn’t mean that plaintiffs who file before certification are not entitled to tolling. *Id.* at 256. They have a right to file at the time of their

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choosing and denying tolling would diminish that right. We find the Second Circuit's reasoning persuasive and adopt it.

[16] We therefore conclude that members of the plaintiff-class who have filed individual suits are entitled to the benefits of *American Pipe* tolling. This includes Bellwether Plaintiff, Wise.

VI. *Medical Monitoring Claims.*

Plaintiffs Pamela Durfey, Paulene Echo Hawk, and Dorothy George's only claim on appeal is for medical monitoring. They do not yet have any diseases attributable to Hanford radiation. Because in all relevant respects Plaintiffs are analogous to the plaintiffs who requested medical monitoring in 2002 in *Berg*, 293 F.3d 1127, Plaintiffs' claims were originally stayed pending this court's decision in that case.

We then decided *Berg*, in which we held that claims for medical monitoring are not compensable under the PAA, because they do not constitute claims of "bodily injury, sickness, disease, or death . . ." *Berg*, 293 F.3d at 1132-33 (citing 42 U.S.C. § 2014(q)). After our decision, Plaintiffs in this case asked the district court to remand their medical monitoring claims to state court. They claimed that *Berg* abrogated subject matter jurisdiction in federal court for all medical monitoring claims. Defendants opposed remand, arguing that *Berg* did not remove the district court's subject matter jurisdiction, but held only that a medical monitoring claim was not cognizable under the PAA.

[17] Although in *Berg* we referred to bodily injury as a jurisdictional prerequisite, *id.* at 1131-33, we used the term "jurisdictional" in the loose sense, perhaps too loose, to mean that medical monitoring claims were not compensable under the PAA absent physical injury. We have been guilty of such expansive use of the term before. See *Khalsa v. Weinberger*, 779 F.2d 1393, 1396 n.2 (9th Cir. 1985) (" . . . jurisdiction has

many possible meanings, ranging from subject matter jurisdiction to the power to grant the relief requested . . . ”). The district court in this case clearly had subject matter jurisdiction under the PAA to decide the issue; the district court simply did not have the power to grant the relief requested because the plaintiffs have not suffered any physical injury.

[18] The PAA is the exclusive means of compensating victims for any and all claims arising out of nuclear incidents. *Berg*, 293 F.3d at 1132; *In re TMI Litig.*, 940 F.2d at 854; see also 42 U.S.C. § 2014(hh), (w) (federal courts have jurisdiction over public liability actions, defined as “any suit asserting . . . any legal liability arising out of or resulting from a nuclear accident”) (emphasis added). This result is consistent with Congress’s explicit intent in enacting the 1988 Amendments and avoiding piecemeal litigation arising from nuclear incidents. We therefore affirm the district court’s exercise of jurisdiction over Plaintiffs’ medical monitoring claims and its conclusion pursuant to our decision in *Berg* that they were not compensable under the Act. The district court properly denied Plaintiffs’ request for a remand to state court.

VII. First Bellwether Trial.

The remaining issues on appeal stem from a variety of legal and evidentiary rulings in the two trials. Three of the six Bellwether Plaintiffs, Goldbloom, Buckner, and Carlisle, lost at the first trial. Three of their evidentiary challenges constitute reversible error; the remaining arguments are meritless.

A. Causation.

We first decide whether under Washington law the district court properly instructed the jury in the bellwether trial on “but-for,” and not “substantial factor,” causation. Plaintiffs contend that the more lenient substantial factor test should apply because other factors could have contributed to their illnesses, such as smoking and genetics. We review the district

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court's application of Washington law *de novo*, *Ostad v. Or. Health Scis. Univ.*, 327 F.3d 876, 883 (9th Cir. 2003), and we affirm the district court's instruction on but-for causation.

Under the PAA, Washington state law controls the standard of causation to be used in this case. See 42 U.S.C. § 2014(hh). ("A public liability action shall be deemed to be an action arising under section 170 [42 U.S.C. § 2210], and the substantive rules for decision in such action shall be derived from the law of the State in which the nuclear incident involved occurs, unless such law is inconsistent with the provisions of such section."). Washington courts will depart from the standard but-for causation instruction in favor of the substantial factor test only in three rare circumstances: (1) the plaintiff was excusably ignorant of the identity of the tortfeasor who caused his injury; (2) the plaintiff probably would have been injured anyway, but lost a significant chance of avoiding the injury; or (3) the plaintiff has been injured by multiple independent causes, each of which would have been sufficient to cause the injury. *Gausvik v. Abbey*, 107 P.3d 98, 108 (Wash. Ct. App. 2005); see also *Daugert v. Pappas*, 704 P.2d 600, 605-06 (Wash. 1985).

The parties agree that the first and second exceptions are not at issue here. Plaintiffs know the identity of the tortfeasors and had no chance to avoid injury. See, e.g., *Lockwood v. AC&S, Inc.*, 744 P.2d 605, 613 (Wash. 1987) (applying the substantial factor test when there is no doubt that asbestos was the cause of a plaintiff's asbestosis, but the plaintiff cannot identify which manufacturer is responsible); *Mavroudis v. Pittsburgh-Corning Corp.*, 935 P.2d 684, 687 (Wash. Ct. App. 1997).

[19] Plaintiffs therefore appear to rely on the third type of substantial factor causation, which applies when there have been "multiple, independent causes," each of which alone is sufficient to cause the injury. *Gausvik*, 107 P.3d at 108. There are two requirements they must satisfy (1) there must have

been multiple causes of the injury; and (2) any one cause alone was sufficient to cause the injury. *Id.* Plaintiffs can not satisfy the second requirement. Plaintiffs instead ask us to expand the substantial factor doctrine and apply the test when there are potentially multiple causes of each plaintiff's injury, such as radiation, smoking, genetics, or pregnancy, even though Plaintiffs cannot show that Hanford radiation alone would have been sufficient to cause the injury. Their reading of Washington law would allow the substantial factor test to supplant but-for causation in virtually all toxic tort cases. Such a result is inconsistent with existing Washington law, which applies the substantial factor test in very limited circumstances. *See also* RESTATEMENT (THIRD) OF TORTS § 26 cmt. j (Proposed Final Draft 2005) (eliminating the substantial factor test). We therefore hold that the district court properly instructed the jury on but-for causation.

B. Evidentiary Rulings Constituting Reversible Error.

i. Cross-Examination of Dr. Davies.

Plaintiffs raise two issues with respect to Defendants' cross-examination of Plaintiffs' endocrinologist expert Dr. Terry Davies, in the first bellwether trial. The first issue concerns the district court's ruling that Dr. Davies could not testify that he authored articles on I-131's effect on thyroid cells. The second issue is Defendants' cross-examination of Dr. Davies with deposition testimony of a non-testifying expert. These errors surrounding Dr. Davies' testimony, taken together, were prejudicial to Plaintiffs' case. We therefore must remand for a new trial.

With respect to Dr. Davies' pre-litigation scholarship, the district court barred Plaintiffs from asking him whether he has "published any peer reviewed articles or papers regarding the capacity of I-131 to kill or damage thyroid cells." The record reveals that the district court believed Dr. Davies could not testify about any pre-litigation articles on this subject, because

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Dr. Davies had not written any peer-reviewed scientific article concluding that doses at less than 100 rads can cause autoimmune disease.

This ruling was an abuse of discretion, because it deprived the jury of testimony from Dr. Davies about the extent of his pre-litigation expertise regarding causes of thyroid illness. That Dr. Davies had not written any articles specifically directed to causation below 100 rads does not mean Dr. Davies' work on causation generally was inadmissible. Plaintiffs' key witness on causation extensively researched and authored scholarship on the capacity of I-131 emissions to kill thyroid cells, and the jury was entitled to know the reach of his expertise.

Standing alone, this error might not be prejudicial; there is, however, a more serious problem with the presentation of Dr. Davies' testimony. Defendants were allowed to impeach one of Plaintiffs' key expert witnesses with inadmissible evidence, hearsay statements that Defendants themselves successfully excluded from Plaintiffs' case-in-chief.

Prior to trial, Plaintiffs proffered the deposition testimony of epidemiologist Dr. A. James Rutenber. According to Plaintiffs, Dr. Rutenber would have testified that although current epidemiological studies prove only that radiation above 40 rads can cause thyroid disease, those studies do not preclude causation at lower dosages. On Defendants' motion, the district court excluded this testimony, finding it was too speculative. Having learned that the most probative part of Dr. Rutenber's testimony was no longer admissible, Plaintiffs chose not to call him to the stand.

Plaintiffs, instead, called Dr. Davies to testify that low dosages of radiation could cause thyroid disease. Dr. Davies had relied on some of Dr. Rutenber's dosage estimates in preparing his pretrial expert report, but he never read nor relied on Dr. Rutenber's deposition in rendering his expert opinion.

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Even though Dr. Ruttenber's causation testimony has been ruled inadmissible prior to trial, defense counsel on cross-examination used Dr. Ruttenber's deposition to impeach Dr. Davies' testimony. Among many other questions, defense counsel asked the following regarding Dr. Ruttenber's deposition:

Q: And doctor, are you aware that Doctor Ruttenber has said that the epidemiological literature can only show an increased risk of autoimmune thyroiditis down to 40 rads?

Q: Did Doctor Ruttenber ever identify to you any epidemiological studies that reported that doses at 10 rad increased the risk of autoimmune thyroid disease? . . .

Q: Yeah, and page 75 at the bottom, lines 23 to 25, "Doctor Ruttenber, is it your testimony that the epidemiology gets you down to increased risk of autoimmune thyroiditis at point 4 gray?" . . . [] now, were you aware that Doctor Ruttenber had taken that position?"

Plaintiffs made continuing objections to this cross-examination, but the district court permitted the questions.

Dr. Ruttenber's statements should not have been used to impeach Dr. Davies because they were inadmissible hearsay on which Dr. Davies did not rely. We agree with the Fifth Circuit that reports of other experts cannot be admitted even as impeachment evidence unless the testifying expert based his opinion on the hearsay in the examined report or testified directly from the report. *Bryan v. John Bean*, 566 F.2d 541, 546-47 (5th Cir. 1978) (citing *Box v. Swindle*, 306 F.2d 882 (5th Cir. 1962)); see also *United States v. Layton*, 549 F. Supp. 903, 920-21 (N.D. Cal. 1982). Because Dr. Davies did not rely on Dr. Ruttenber's deposition, and because the trial

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court had excluded the deposition testimony as inadmissible hearsay, Defendants should not have been allowed to use the testimony to impeach Dr. Davies' credibility.

Defendants urge us to find that the error is harmless. Defendants, however, overlook their own emphasis on the significance of Dr. Davies' testimony and his credibility to the jury. Defendants read a large portion of Dr. Davies' cross-examination back to the jury in closing arguments, highlighting how Dr. Ruttenber's deposition testimony rendered Dr. Davies' testimony not credible. They then stated:

[I]f you have Ruttenber saying 40 rads as of today, based on his review of radiation epidemiology, how does Davies get away with saying at 10 rads their dose; we say it's closer to 6. How does Davies get away with offering an opinion on causation? It's just not credible.

[20] Dr. Davies was the key witness on causation and Defendants' strategy was to cast doubt on his opinion. They did just that by improperly using Dr. Ruttenber's deposition. The prejudice to Plaintiffs was exacerbated by the court's ruling that Plaintiffs were unable to rehabilitate Dr. Davies' credibility with evidence of his pre-litigation, peer-reviewed articles on causation. Dr. Davies' endocrinologist testimony on causation was particularly probative, because Plaintiffs already had lost the key expert's epidemiological testimony, Dr. Ruttenber's opinion, regarding causation. We thus have no choice but to reverse the verdicts against Plaintiffs Goldbloom, Carlisle, and Buckner and remand for a new trial.

ii. Hurthle Cell Evidence.

There is an additional ground for reversal with respect to Plaintiff Goldbloom. The district court erred when it instructed the jury to disregard Dr. Peters' expert testimony

that Goldbloom's thyroid contained Hurthle cells, which are indicative of some kind of injury to the thyroid.

Although Dr. Peters' pretrial expert report contained no evidence regarding the presence of Hurthle cells in Goldbloom's thyroid, defense counsel did not object to the testimony at trial. Partway through deliberations, the jury astutely asked whether it could consider Dr. Peters' testimony even though evidence regarding Hurthle cells was not in the expert report. The district court held a conference with the parties to discuss the jury's question. Plaintiffs argued that the jury should be able to consider the Hurthle cell evidence, because Defendants did not object to its admission at trial. Defendants argued that the court should instruct the jury to disregard the evidence, because it was not contained in Dr. Peters' pretrial report. The district court agreed with Defendants and instructed the jury to disregard the Hurthle cell testimony.

This ruling was erroneous. It is a rare circumstance when the court may exclude evidence after the close of the parties' cases. *Jerden v. Amstutz*, 430 F.3d 1231, 1236-37 (9th Cir. 2005), *amended on other grounds*, 2006 U.S. App. LEXIS 673 (9th Cir. Jan. 12, 2006). The reasons for such caution are clear. If the parties have already rested, they no longer have a chance to provide a curative response to the excluded evidence. *Id.* at 1237. They also do not have a chance to present the testimony in another fashion, such as calling an additional witness. *Id.* (citing *Bartleson v. United States*, 96 F.3d 1270, 1278 (9th Cir. 1996)). And most pertinent to this case, it is impossible to erase from the jury's minds any arguments that were made during closing summation about the belatedly-excluded evidence.

In this case, not only did Defendants fail to object to the Hurthle cell evidence, they used the evidence themselves, pointing to the testimony during closing summation as evidence that Dr. Peters was not a reliable witness. Defendants should not have been allowed to reap the benefit of a tardy

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exclusion of Plaintiff's evidence after they used the same evidence in their closing argument as a basis for impeachment.

[21] The error in excluding the evidence was prejudicial. Plaintiff Goldbloom did not have an opportunity to remedy the error, because the evidence was not excluded until after the parties had rested. Her only remedy was to seek a mistrial. The error in excluding the Hurthle cell evidence, when coupled with the errors above, thus warrants a new trial.

C. Remaining Evidentiary Challenges.

Plaintiffs' remaining claims are all challenges to various evidentiary rulings. To help facilitate the bellwether process, we briefly address each, although none has merit.

i. Dr. Rutenber's Testimony.

[22] The district court did not err in prohibiting Plaintiffs' epidemiologist expert, Dr. Rutenber, from testifying that scientific extrapolation supports a finding that radiation below 40 rads could cause hypothyroidism or autoimmune thyroiditis. Plaintiffs assert that the district court's rulings impermissibly required epidemiological studies to be a prerequisite to causation testimony. *See In re Hanford*, 292 F.3d 1124; *Kennedy v. Collagen Corp.*, 161 F.3d 1226, 1229-30 (9th Cir. 1998). The court's ruling, however, did not go that far. The court only precluded Dr. Rutenber from, first, speculating that such extrapolation would likely produce results showing causation below 40 rads, and, second, stating that current epidemiological data do not contradict or prevent such a finding. Because the data Dr. Rutenber used to make these two conclusions were not reliable, *see Daubert v. Merrell Dow Pharms.*, 509 U.S. 579, 589 (1993), the district court did not abuse its discretion in excluding Dr. Rutenber's opinion.

ii. Alternative Causes of Thyroid Disease.

[23] The district court also did not err in permitting Defendants to cross-examine Plaintiffs' experts on alternative

causes of thyroid disease. Plaintiffs' chosen methodology for proving causation was differential diagnosis, which is a process by which an expert compiles a comprehensive list of potential causes and then engages in a process of elimination to reach the most likely cause. *See Clausen v. M/W New Carissa*, 339 F.3d 1049, 1057-58 (9th Cir. 2003). Plaintiffs' experts enumerated possible causes of Plaintiffs' diseases, such as genetic predisposition, pregnancy, and stress, and then eliminated them, leaving radioiodine as the only probable cause. Having put these alternative causes at issue, Plaintiffs could not expect Defendants not to question the experts' rejection of them. Defendants were entitled to impeach the experts' methodology and their underlying conclusions.

iii. Indemnification.

[24] Plaintiffs challenge the district court's ruling that Plaintiffs could not tell the jury that the federal government would indemnify Defendants for any liability imposed. Evidence of indemnification is generally inadmissible but may be used to show prejudice or bias of a witness. *See, e.g.,* FED. R. EVID. 411. The only evidence to which a question of government bias might have arisen, however, was the Hanford Environment Dose Reconstruction Project ("HEDR") and Plaintiffs stipulated to the accuracy of this document prior to trial. That stipulation is binding. *U.S. Dep't of Labor v. Kerr-McGee Chem. Corp.*, 15 OSHC (BNA) 2070 (9th Cir. 1993); *Am. Title Ins. Co. v. Lacelaw Corp.*, 861 F.2d 224, 226 (9th Cir. 1988). There was thus no permissible ground on which Plaintiffs could introduce evidence of indemnification. The district court did not err in its application of Rule 411.

iv. Dr. Hill's Testimony.

[25] Plaintiffs' final contention on appeal is that the district court abused its discretion when it prohibited Plaintiffs' expert Dr. Hill from comparing radioiodine causation in animals to causation in humans. This ruling was not an abuse of

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discretion, because the information was not contained in Dr. Hill's pretrial expert report and Defendants were not allowed to question Dr. Hill regarding animal studies and thyroid disease at his deposition.

VIII. Rhodes' Second Trial.

Plaintiff-Appellant Shannon Rhodes suffers from several thyroid problems, the most serious of which is thyroid cancer. Pursuant to the stipulation prior to trial, Rhodes was exposed to Hanford radiation of 2.3 to 17 rads. At the bellwether trial, she offered the testimony of her expert witness, Dr. Inder Chopra, who testified that it was more probable than not that Hanford radiation caused Rhodes' cancer. The jury failed to reach a decision on Rhodes' claims, however, and the trial court was forced to order a mistrial. In November 2005, Rhodes tried her case for a second time, and the second jury rendered a verdict for Defendants. Rhodes' appeals several legal and evidentiary rulings from her second trial.

A. Juror Misconduct.

[26] Rhodes claims that the district court erred in denying her post-trial motion for a new trial, because the jury improperly considered extrinsic evidence during its deliberations. Rhodes proffers the signed affidavit of a juror stating that "during deliberations and immediately after the first of several votes were taken on the issue of causation, one of the jurors announced that this was Mrs. Rhodes second trial on the very issues that we were to decide and that she had lost in the first trial."

A party is entitled to a new trial when the jury obtains or uses evidence that has not been introduced during trial only if the improperly considered evidence was extrinsic. *United States v. Keating*, 147 F.3d 895, 900 (9th Cir. 1998). The district court looked at the trial record as a whole and decided that any evidence regarding Rhodes' previous trial came from

accidental, off-hand comments during the second trial, and thus the evidence was not extrinsic.

We have conducted an independent review of the record, *United States v. Madrid*, 842 F.2d 1090, 1092 (9th Cir. 1988), and we affirm. There were several instances during Rhodes' trial when the first litigation was mistakenly mentioned by either a witness or an attorney and from which the jurors could have inferred that Rhodes had litigated these same claims before and "lost." We agree with the district court that because the evidence was not extrinsic, there was no juror misconduct.

B. Voir Dire.

[27] The district court did not err in refusing to hold an evidentiary hearing regarding possible juror misconduct during voir dire. A motion for a new trial based on juror dishonesty during voir dire requires a showing that (1) a juror failed to answer honestly a material question; and (2) a correct answer would have provided a valid basis for a challenge for cause. *Price v. Kramer*, 200 F.3d 1237, 1254 (9th Cir. 2000). Other than the affidavit, which stated that a juror admitted during deliberations that he read about Rhodes' prior trial, Rhodes does not proffer any evidence that the juror lied during voir dire. The juror who read about Rhodes' trial easily could have done so after the trial began. He also could have read about it in the medical report that was admitted as evidence, in which Rhodes' own doctor at the time of the first bellwether trial noted that Rhodes was stressed because her litigation was not going well. Rhodes has not established any juror misconduct entitling her to a new trial.

C. Reference to Impeachment Evidence as "Totally Collateral."

During trial, the district court referred to evidence presented by Rhodes to impeach a defense expert as "totally col-

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lateral.” The district court later went on the record and admitted his comment was a mistake. Rhodes contends that the district court’s comment unfairly prejudiced the jury in favor of the defense, entitling her to a new trial. There was no undue prejudice.

[28] We review a judge’s comments during trial for an abuse of discretion and reverse only if they “projected to the jury an appearance of advocacy or partiality.” *United States v. Parker*, 241 F.3d 1114, 1119 (9th Cir. 2001). A trial court has substantial leeway in overseeing the presentation of evidence, because it is most familiar with the dynamics of a proceeding and the dangers of jury confusion. *See, e.g., S.M. v. J.K.*, 262 F.3d 914, 919 (9th Cir. 2001). The district court’s reference to certain Plaintiff’s testimony as “totally collateral” when sustaining Defendants’ objection, although an admitted mistake, did not project an appearance of advocacy or partiality that warrants reversal in this case.

D. “Best Estimate” Requirement.

Plaintiff next contends that the district court erred in requiring Dr. Hoffman to give a “best estimate” of the dose of radiation received by Rhodes. At the bellwether trial, Dr. Hoffman testified to a range of possible dosages for each individual with a certain percentage of confidence (i.e. a confidence interval). Defendants objected to this use of confidence intervals in Rhodes’ second trial, claiming they would mislead the jury and encourage them mistakenly to believe that there was a high likelihood that Rhodes was exposed to radiation near the upper-boundary of the dosage range, when in fact, the expert was only capable of endorsing the entire range with ninety-percent confidence. Plaintiff agreed to the district court’s suggestion that Dr. Hoffman testify to a range of possible dosage exposure, but also give a “best estimate” of individual dosage exposure, which was the average of the range. Rhodes now argues that this ruling was an abuse of discretion.

[29] The district court has discretion to exclude evidence when its probative value is substantially outweighed by the danger of misleading the jury or confusing the issues. *See* FED. R. EVID. 403. This is especially true with respect to expert witnesses. *Daubert*, 509 U.S. at 595; *Daubert v. Merrell Dow Pharms., Inc.*, 43 F.3d 1311, 1321 n.17 (9th Cir. 1995). In reviewing the record of the pre-trial hearing and the application of the “best estimate” testimony at both trials, the district court struck a fair balance between probative and misleading testimony. It allowed Dr. Hoffman to explain his confidence interval and to give a range of possible dosage exposure. It also helped the jury focus on the significance of such an interval, by having Dr. Hoffman highlight the average of the possible range. This ruling was not an abuse of discretion.

E. Cross-Examination of Dr. Hoffman.

[30] The district court did not abuse its discretion in allowing Defendants to cross-examine Dr. Hoffman with testimony he gave at the first bellwether trial. At the first trial, Dr. Hoffman testified to each plaintiff’s “probability of causation” (“PC”). Plaintiff Rhodes apparently decided that Dr. Hoffman’s testimony on this issue was more harmful than helpful, and in a pre-trial motion for her second trial, she asked the court to exclude all references by either party to Dr. Hoffman’s PC analysis. Rhodes, however, still wanted Dr. Hoffman to testify on other topics.

The district court properly denied the motion. Dr. Hoffman’s testimony at the first bellwether trial was an admission of a party opponent under Federal Rule of Evidence 801(d)(2)(C). *Glendale Fed. Bank, FSB v. United States*, 39 Fed. Cl. 422, 424-25 (1997). Plaintiff cannot now exclude trial testimony that she, herself, proffered. Defendants were properly permitted to cross-examine Dr. Hoffman on his previous PC analysis.

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F. Cross-Examination of Dr. Chopra.

Rhodes next urges us to hold that the district court abused its discretion in allowing Defendants to use Dr. Hoffman's PC analysis to cross-examine Dr. Chopra and impeach her credibility. We agree with Rhodes that this ruling was an abuse of discretion, but because the error had little or no effect on the verdict, there was no reversible error.

Opposing counsel may cross-examine an expert on the facts or data on which his opinion was based. *See* FED. R. EVID. 703; *United States v. Preciado-Gomez*, 529 F.2d 935, 942 (9th Cir. 1976). Because Dr. Chopra did not rely on Dr. Hoffman's PC data, it should not have been admitted under that rule. *See, e.g., Bryan*, 566 F.2d at 547; *Layton*, 549 F. Supp. at 920; *Briggs v. Chi. G. W. R. Co.*, 57 N.W.2d 572, 583-84 (Minn. 1953).

Rhodes, however, does not show how the PC evidence could have materially affected the jury's verdict. Defendants had already undermined Dr. Chopra's credibility by highlighting the doctor's lack of due diligence in uncovering Rhodes' medical history. There is no reason to believe that Defendants' use of Dr. Hoffman's testimony had any additional, much less, any substantial effect on the verdict.

* * *

[31] The jury's defense verdict in Rhodes' second trial must be affirmed.

IX. Conclusion.

We are mindful of the time and resources both the district court and the parties have expended in this protracted litigation. We also realize that resolution is needed. We affirm the district court's major rulings. These relate to the government contractor defense, strict liability, and causation. We also

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affirm the district court's ruling on the medical monitoring claims and the judgment against Plaintiff Rhodes, as well as the judgments in favor of Plaintiffs Stanton and Wise. We reverse, on evidentiary grounds, the judgments against Plaintiffs Buckner, Carlisle, and Goldbloom. We remand those matters for further proceedings.

Each party to bear its own costs on appeal.

AFFIRMED IN PART; REVERSED AND REMANDED
IN PART.