

File Name: 05a0112p.06

UNITED STATES COURT OF APPEALS

FOR THE SIXTH CIRCUIT

ALPHONSE RAINER *et al.*,

Plaintiffs-Appellants,

v.

UNION CARBIDE CORPORATION *et al.*,

Defendants-Appellees.

No. 03-6032

Appeal from the United States District Court
for the Western District of Kentucky at Paducah.
Nos. 99-00255; 00-00220—Joseph H. McKinley, Jr., District Judge.

Argued: December 1, 2004

Decided and Filed: March 8, 2005

Before: DAUGHTREY and GILMAN, Circuit Judges; RICE, District Judge.*

COUNSEL

ARGUED: Douglas H. Morris II, OLDFATHER & MORRIS, Louisville, Kentucky, for Appellants. Robert E. Tait, VORYS, SATER, SEYMOUR & PEASE, Columbus, Ohio, Elizabeth R. Geise, GOODWIN PROCTER, Washington, D.C., for Appellees. **ON BRIEF:** Douglas H. Morris II, Andrew J. Horne, OLDFATHER & MORRIS, Louisville, Kentucky, William F. McMurry, McMURRY & ASSOCIATES, Louisville, Kentucky, for Appellants. Robert E. Tait, Gail C. Ford, VORYS, SATER, SEYMOUR & PEASE, Columbus, Ohio, Mark C. Whitlow, WHITLOW, ROBERTS, HOUSTON & STRAUB, Paducah, Kentucky, G. Wilson Horde, KRAMER, RAYSON, LEAKE, RODGERS & MORGAN, Knoxville, Tennessee, Elizabeth R. Geise, Matthew M. Hoffman, GOODWIN PROCTER, Washington, D.C., Charles S. Cassis, Lori E. Hammond, FROST, BROWN & TODD, Louisville, Kentucky, for Appellees.

OPINION

RONALD LEE GILMAN, Circuit Judge. Workers at a uranium-enrichment plant near Paducah, Kentucky were exposed over many years to dangerous radioactive substances without their knowledge. Although not yet suffering from any symptoms of a clinical disease, four such workers and members of their families have sued General Electric (GE), the supplier of the spent uranium

* The Honorable Walter H. Rice, Senior United States District Judge for the Southern District of Ohio, sitting by designation.

fuel to the plant, and the plant's three successive operators (the defendant-operators) on various state and federal grounds. In a series of orders, the district court rejected all of the plaintiffs' claims on the basis that no present harm has been shown and that the Kentucky Workers' Compensation Act provides the exclusive remedy for the former workers. For the reasons set forth below, we **AFFIRM** the judgment of the district court.

I. BACKGROUND

A. Factual background

The Paducah Gas Diffusion Plant (PGDP) is a sprawling industrial plant located on a 3,425-acre tract of land in western Kentucky. It was built by the federal government in the early 1950s as part of an initial foray into uranium processing. Although the Department of Energy (DOE) retains full ownership of the plant, the PGDP has been leased since its construction to private companies. Its three successive operators have all been named as defendants in this suit. They are Union Carbide (formerly known as Carbide and Chemicals Company, 1950-1984), Martin Marietta (and its subsidiary Martin Marietta Utilities Services, 1984-1995), and Lockheed Martin Utilities Services (1995 to the present). Approximately 1,800 individuals have been employed by the PGDP at any one time.

The primary purpose of the PGDP is and always has been to enrich uranium. Unprocessed uranium, a naturally occurring element, arrives at the PGDP in solid form. The solid uranium is then converted into a gaseous form and forced through a series of membranes that increase the concentration of uranium-235, an isotope of the element, from approximately 0.7 percent to 2 percent. This "enriched" uranium is then shipped both domestically and overseas for use in commercial nuclear reactors and in military applications. The PGDP has, since 1952, processed over one million tons of uranium in this manner. Although enriched uranium is not a highly radioactive material, it is known to be toxic, both chemically and radiologically, if ingested.

In addition to enriching unprocessed uranium, the PGDP has intermittently reprocessed spent uranium that has been removed from nuclear reactors. Much of this spent uranium was first processed by GE, as the operator of the Hanford Nuclear Reservation in Richland, Washington, from reactor fuel rods. The Hanford Nuclear Reservation would in turn send the uranium, by this time in the form of an ash-like powder, to the PGDP for further enrichment through its normal gas-diffusion process. Between 1953-64 and 1969-74, the PGDP processed over 100,000 tons of used uranium fuel in this manner.

Spent uranium is known to include two unwanted byproducts: neptunium-237 and plutonium-239. Both are highly radioactive, with long half-lives. Specifically, neptunium-237 is 2,000 times more radioactive than unprocessed uranium and has a half-life of 2.14 million years. Plutonium-239 is even more dangerous, being 89 times as radioactive as neptunium-237, with a half-life of 24,065 years. Elements such as neptunium-237 and plutonium-239 do not exist in nature and are known in the scientific community as "transuranics."

As a consequence of receiving and processing spent uranium, the PGDP became contaminated with these toxic transuranics. Tests conducted by the DOE and other organizations confirmed the existence of neptunium and plutonium at the PGDP as early as 1959, only a few years after the plant's opening. Monthly tests of air quality and annual or biannual reports provided further evidence that dangerous quantities of these substances were present at the PGDP. Recent reports have concluded that approximately 18.4 kilograms of neptunium-237 and 330 grams of plutonium-239 were received at the PGDP. Both quantities are well beyond the amount considered safe for a plant the size of the PGDP.

The rank-and-file PGDP employees were apparently kept ignorant about the presence of transuranics at the plant. One manager testified during a deposition that, despite his ten-year tenure, he could not recall whether workers were ever informed about the presence of either neptunium or plutonium. Company documents also reveal a disregard for worker safety. A 1960 memo written by a medical researcher, for example, noted that management hesitated to have approximately 300 workers examined because of the “union’s use of this as an excuse for hazard pay.” The same researcher noted that he had “watched one man push up his mask and smoke a cigarette using potentially contaminated hands and gloves.” Another memo commented that analyzing neptunium exposure through urine samples would be too “tedious and expensive.” Workers were not required to wash their hands and, into the late 1970s, not required to use respirators.

Neither party disputes that transuranics are extremely toxic. Once ingested or inhaled, they quickly settle in the bones and liver, posing a risk as they decay. Dr. Gordon K. Livingston, a genetics expert for the plaintiffs, submitted that

[w]hen energy associated with ionizing radiation is transferred to atoms and molecules in human tissue, the molecular structure and function of the tissue is disrupted in a manner which is related to the dose or amount of energy absorbed. . . . Laboratory studies on animals and human populations exposed to ionizing radiation have shown that it induces cancer. Some population groups where this relationship has been conclusively demonstrated includes radium-dial painters (bone cancer), uranium miners (lung cancer), early medical radiation workers (various malignancies), atomic bomb survivors (leukemia and carcinomas) and individuals exposed to fallout radiation as a result of the nuclear reactor accident at Chernobyl (thyroid cancer).

Despite the fact that these transuranics are dangerous carcinogens, however, the plaintiffs have yet to display any salient clinical symptoms. Plaintiff Shanda Mathis, for example, was asked:

Q. When was the last time you had a physical?

A. A full physical, July of 2000 through a program with our job. You know, cholesterol, blood, diabetes, all that.

Q. Did your physical reveal any problems of any kind?

A. None, none.

Another plaintiff, Sybil Mathis, was asked whether a doctor had ever told her that she should be “concerned” about her health because her father worked at the PGDP. She replied that “[n]o, I don’t know what they have had a reason to. Like I said, I’m in seemingly good health. I go for a regular checkup once a year, and I don’t—I don’t know that a doctor has had a reason to tell me.” Similarly, plaintiff Janie Rainer testified that she had “[n]o present bodily injury.” And Charles Ramsey, one of the lead plaintiffs in the case, testified that his main fear was not present injury, but that he was “worried to death what [the radiation] is doing to me. This is [not] something [that will] give you cancer today or tomorrow; this is something [that will give you cancer] 10, 20 years from now.”

The plaintiffs nevertheless assert that they have suffered certain subcellular damage to their DNA and chromosomes. As proof, they point to the testimony of several experts. Dr. Livingston, for example, stated in his affidavit that he, along with Dr. Ernst Schmid, performed chromosome tests on blood samples provided by Alphonse Rainer, Charles Ramsey, and David Sacharnoski, three of the lead plaintiffs in this case. (Apparently not all the plaintiffs have been tested. For the purposes of summary judgment, however, we will assume that all of the plaintiffs have similar subcellular damage.) The tests revealed “various structural chromosome abnormalities” within some of the cells. Dr. Livingston stated in an affidavit that “[t]he 8% of [plaintiffs’] cells which showed various structural chromosome abnormalities can be compared to an average of 1.3% recently

reported in the scientific literature.” In his opinion, “the high frequency of structural chromosome alternations . . . was caused by exposure to ionizing radiation in excess of acceptable radiation protection standards.”

Other experts testified that this exposure constitutes irreversible harm and damage to the body. Dr. Livingston concluded that “[t]he physical injuries sustained by the DNA and the misrepair of those DNA strands is analogous to a knife wound of the skin dividing the cells of the body and the scar tissue that is generated as the body attempts to repair that cellular damage.” Dr. Martin Raff, another expert, drew the analogy to HIV, noting that “patients who test positive for the HIV virus may not have any signs or symptoms of clinical disease for many years [But e]ven though a person with HIV does not have ‘clinical disease’ they are clearly in a diseased state.” He also explained that “[r]adiation damage to chromosomes is the quintessential determinant of altered physiologic function because our chromosomes control each and every bodily function As such this premorbid state is disease.” Dr. Daniel M. Sullivan stated in his affidavit that “[t]he physical injuries sustained by the DNA [of the plaintiffs] and the misrepair of those DNA strands is analogous to a cutting wound of the tissue of the body. . . . The primary difference is that DNA injury and chromosome misrepair have much more ominous consequences for the individual since such an injury is associated with an increased likelihood of the occurrence of cancer.”

B. Procedural background

The plaintiffs are divided into four classes. Class I is comprised of current and former PGDP employees who assert claims against all of the defendant-operators. Those in Class II consists of employees who worked at PGDP between 1984 and 1988 who were never employed by Union Carbide, but are suing the company on the basis of its “radioactive legacy.” Class III consists of those employees who worked at the plant between 1952 and 1998 and who assert claims against GE because it supplied the PGDP with spent uranium containing the transuranics. Finally, Class IV consists of the family members of the plaintiffs in the first three classes.

The plaintiffs commenced suit in September of 1999. In an order dated March 30, 2001, the district court dismissed the claims brought by the Class I plaintiffs, concluding that the Kentucky Workers’ Compensation Act provided the exclusive remedy for claims brought by employees against their employers. A year later, in orders filed on March 15, 2002 and May 15, 2002, the court dismissed the *Bivens* claims (based upon the case of *Bivens v. Six Unknown Named Agents of Federal Bureau of Narcotics*, 403 U.S. 388 (1971)) brought by the remaining plaintiffs, relying upon the Supreme Court’s decision in *Correctional Services Corp. v. Malesko*, 534 U.S. 61 (2001). In a memorandum opinion filed on July 11, 2003, the district court concluded that the Price-Anderson Act, 42 U.S.C. § 2011, preempted the plaintiffs’ state-law claims. The court further concluded that, in light of the Kentucky Supreme Court’s opinion in *Wood v. Wyeth-Ayerst Laboratories*, 82 S.W.3d 849 (Ky. 2002), the plaintiffs’ evidence of subcellular damage was insufficient to be considered “bodily injury” under the Price-Anderson Act. A final judgment was ultimately entered on July 28, 2003, dismissing all of the plaintiffs’ claims with prejudice. This appeal followed.

II. ANALYSIS

A. Standard of review

We review the district court’s grant of summary judgment de novo. *Therma-Scan, Inc. v. Thermoscan, Inc.*, 295 F.3d 623, 629 (6th Cir. 2002). Summary judgment is proper where there exists no genuine issue of material fact and one party is entitled to judgment as a matter of law. Fed. R. Civ. P. 56(c). In considering a motion for summary judgment, the district court must construe the evidence and draw all reasonable inferences in favor of the nonmoving party. *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574, 587 (1996). The central issue is “whether the

evidence presents a sufficient disagreement to require submission to a jury or whether it is so one-sided that one party must prevail as a matter of law.” *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 251-252 (1986).

B. Claims brought by the Class I plaintiffs

The defendant-operators submit that all of the claims brought by the Class I plaintiffs are barred by the Kentucky Workers’ Compensation Act. Ky. Rev. Stat. Ann. §342 (2004). This Act, they argue, provides the exclusive remedy for on-the-job injuries. The relevant provision of the Act states as follows:

If an employer secures payment of compensation as required by this chapter, the liability of such employer under this chapter shall be exclusive and in place of all other liability of such employer to the employee, his legal representative, husband or wife, parents, dependents, next of kin, and anyone otherwise entitled to recover damages from such employer at law or in admiralty on account of such injury or death.

Ky. Rev. Stat. Ann. §342.690(1) (2004).

The plaintiffs acknowledge the normal exclusivity of the Kentucky Workers’ Compensation Act, but contend that their claim falls under one of the Act’s main exceptions, which reserves a cause of action to a worker who is injured “through the deliberate intention of his employer to produce such injury or death.” Ky. Rev. Stat. Ann. §342.610(4) (2004). In so arguing, the plaintiffs assert that the phrase “deliberate intention” must “include conduct undertaken with the knowledge that it will produce a certain result, or is substantially certain to do so.” They claim that a narrower interpretation “would mean that a landscaping employer who ordered his workers to mow grass and plant trees in a garden filled with land mines . . . would not be liable under the common law due to the exclusive remedy provisions of the Kentucky Workers’ Compensation Act.”

We do not find the plaintiffs’ hypothetical to be analogous to the facts before us, nor is their position supported by Kentucky law. In *Fryman v. Electric Steam Radiator Corp.*, 277 S.W.2d 25 (Ky. 1955), the first case to directly address the specific meaning of Ky. Rev. Stat. Ann. § 342.610(4)’s “deliberate intention” language, the Kentucky Supreme Court considered the case of a employee injured while operating a defective metal press. The court dismissed the worker’s claims, concluding that the employer had not possessed the “deliberate intention” to injure as required by Ky. Rev. Stat. Ann. § 342.610(4), and noting that “[t]he phrase ‘deliberate intention’ implies that the employer must have determined to injure the employee.” *Id.* at 26. As the court observed,

many states have workmen’s compensation statutes very similar to ours and contain the exception identical to ours; namely, that liability at law exists where the injuries result through the deliberate intention of the employer. Most of the cases, if not all, from the other jurisdictions have interpreted the meaning of the phrase “deliberate intention” to be that the employer must have determined to injure an employee and used some means appropriate to that end, and there must be a specific intent.

Id. at 27.

This narrow reading of “deliberate intention” has been adopted by subsequent Kentucky cases addressing the question. In *McCray v. Davis H. Elliott Co.*, 419 S.W.2d 542 (Ky. 1967), for example, the estate of a deceased worker claimed that the employer had demonstrated a “deliberate intention” to injure the worker by forcing him to work on a tall, dangerous electrical pole on which he was electrocuted. The Kentucky Supreme Court rejected the estate’s claim, citing *Fryman* in

declining the invitation to “to equate wanton and gross negligence with ‘deliberate intention’ as used in KRS [§ 342.610(4)].” *Id.* at 543.

A similar conclusion was reached by the Kentucky Supreme Court in the recent case of *Moore v. Environmental Constr. Corp.*, 147 S.W.3d 13 (Ky. 2004). In that case, a worker was killed when a trench collapsed on him. His estate alleged that the employer’s conduct was within the “deliberate intention” exception to the Kentucky Workers’ Compensation Act. Rejecting the estate’s claims, the court observed that “‘deliberate intention’ [has been interpreted to mean] that the employer must have determined to injure an employee and used some means appropriate to that end, and there must be specific intent. The defendant who acts in the belief or consciousness that the act is causing an appreciable risk of harm to another may be negligent, and if the risk is great the conduct may be characterized as reckless or wanton, but it is *not an intentional wrong*.” *Id.* at 16-17 (emphasis added) (quotation marks omitted).

At the federal level, this court addressed the same Kentucky-law question in *Brierly v. Alusuisse Flexible Packaging, Inc.*, 184 F.3d 527 (6th Cir. 1999). In that case, a worker at a food-packing factory was killed when a washing machine exploded. The court rejected the application of the “deliberate intention” exception, noting that

[i]n light of the Kentucky Supreme Court precedent interpreting the phrase “deliberate intention,” we conclude that the plaintiff did not present evidence to the district court from which a reasonable jury could conclude that Alusuisse deliberately intended to cause [the plaintiff’s] death Even if [the employer’s] actions were reckless or wanton, which may be a fair characterization, there is no indication or reasonable inference that the company intended to injure or kill [the plaintiff].

Id. at 536 (emphasis added). This same narrow standard was also followed by the district court in *Blanton v. Cooper Indus.*, 99 F. Supp. 2d 797 (E.D. Ky. 2000), in which workers at a chemical plant claimed that they developed cancer because of contamination at the plant. The court entered summary judgment in favor of the defendants, citing *Fryman* and *McCray* and noting that “[t]he plaintiff in this case has not alleged or produced any evidence that the defendants either determined to injure the employees or had any specific intent to this end.” *Id.* at 805.

The plaintiffs nonetheless point to a number of cases from other jurisdictions and to secondary authorities that support the proposition that “deliberate intention” may also include instances where the employer acts with the knowledge that harm might follow. But even if this is the appropriate standard in other jurisdictions and in other fields of law, this is not the Kentucky Supreme Court’s interpretation of the Kentucky Workers’ Compensation Act. As the district court noted in its lengthy and persuasive assessment, “[t]he definition of ‘deliberate intent[ion] to produce injury’ as used in the [Kentucky Workers’ Compensation Act] is much narrower than ‘intent’ in general tort law, where the substantial certainty analysis is proper. And . . . although a few states have either legislatively or judicially adopted the substantial certain[ty] standard for their intent-based exclusivity exception, none had their genesis in a federal court.”

In sum, Kentucky caselaw is dispositive of the claims brought by the Class I plaintiffs. Cases like *Fryman* have established that the “deliberate intention” exception to the Kentucky Workers’ Compensation Act is viable only when the employer has “determined to injure an employee and used some means appropriate to that end, and there must be a specific intent.” *Fryman*, 277 S.W.2d at 27. Because no proof has been presented in this case to demonstrate that the defendants possessed the specific intention to injure the PGDP employees, the district court did not err in dismissing the claims of the Class I plaintiffs.

C. Waiver of claims under the under the Price-Anderson Act

In addressing the claims of the plaintiffs in Classes II-IV (i.e., the claims brought by plaintiffs against defendants who were not their immediate employers), the district court noted the applicability of the Price-Anderson Act, 42 U.S.C. §§ 2011. This Act was originally passed in 1957 as a provision limiting the legal liability of owners, operators, and suppliers of nuclear plants, and mandating that they purchase a specified amount of liability insurance. Thirty years later, however, “Congress enacted the Price-Anderson Amendments Act of 1988, creating a federal cause of action for ‘public liability actions’ arising from nuclear incidents. The federal courts were granted jurisdiction over these actions, and actions filed in state court were subject to removal. The amendment was not intended to alter the state law nature of the underlying tort claims.” *Day v. NLO, Inc.*, 3 F.3d 153, 154 n.1 (6th Cir. 1993).

As the district court noted, this court has interpreted the Price-Anderson Act as preempting otherwise applicable state-law causes of action. In *Nieman v. NLO, Inc.*, 108 F.3d 1546 (6th Cir. 1997), this court considered the claims of a plaintiff who lived near a nuclear facility. In addition to claims under the Price-Anderson Act, the plaintiff raised arguments under various state common-law theories of trespass. The *Nieman* court rejected these arguments, concluding that

the Price-Anderson Act preempts [the plaintiff’s] state law claims; the state law claims cannot stand as separate causes of action. [The plaintiff] can sue under the Price-Anderson Act, as amended, or not at all. His federal claim will be derived from state law, as mandated by § 2014(hh), to the extent it is not inconsistent with federal law.

Id. at 1553. The district court below therefore properly dismissed the plaintiffs’ state-law claims.

No appeal was taken by the plaintiffs in the present case regarding the district court’s ruling that the Price-Anderson Act preempts any separate causes of action under state law. As a result, the defendants argue that “[s]ince plaintiffs have not challenged the district court’s interpretation of federal law, the district court’s holding that they failed to present sufficient evidence to withstand summary judgment under the Price-Anderson Act must be deemed correct.” In sum, the defendants request that all of the plaintiffs’ claims be dismissed on procedural grounds.

The problem with this argument is that it ignores the boundaries established by Congress when it enacted the Price-Anderson Act. As this court has noted, the amendments to the Act “w[ere] not intended to alter the state law nature of the underlying tort claims. [The Act] provides that ‘the substantive rules for decision in such action shall be derived from the State in which the nuclear incident occurs, unless such law is inconsistent with the provisions of such section.’” *Day*, 3 F.3d at 154 n.1 (citations omitted); *see also Heinrich ex rel. Heinrich v. Sweet*, 62 F. Supp. 2d 282, 296-97 (D. Mass. 1999) (“The [Price-Anderson] Act incorporates state law as the substantive rule of decision to govern the federal cause of action, so long as the state law is not inconsistent with the purposes of the Act.”) Thus, the Act specifically calls for state law to provide the substantive foundations for a Price-Anderson claim.

The plaintiffs in the present case necessarily had to argue on the basis of Kentucky law in order to demonstrate the legitimacy of their “bodily injury” claim under the Price-Anderson Act. Because the true underlying conflict was based upon the district court’s interpretation of Kentucky law, the plaintiffs appropriately tailored their brief to address that concern. The fact that the words “Price-Anderson Act” go unmentioned in the plaintiffs’ brief is, moreover, inconclusive as to whether they intended to waive their argument that the district court’s interpretation of the Act was incorrect. To the contrary, we interpret their failure to mention the Act is essentially a concession by the plaintiffs that the Price-Anderson Act governs their claims. Indeed, the plaintiffs admit that

“if the trial court’s interpretation of Kentucky law stands[,] . . . no state tort law claims would be available directly against the Appellees.” To mention the Price-Anderson Act by name would have added nothing to the substance of their arguments, which, as noted, necessarily had to rely on substantive Kentucky law. We therefore decline the defendants’ invitation to dismiss all of the plaintiffs’ claims under the Price-Anderson Act solely because of the latter’s failure to mention the Act in their brief.

D. “Bodily injury” under the Price-Anderson Act

After dismissing the claims of the Class I plaintiffs on the basis of the Kentucky Workers’ Compensation Act, the district court subsequently dismissed the claims of the remaining plaintiffs by finding that they had failed to meet the Price-Anderson Act’s “bodily injury” requirement. The plaintiffs argue on appeal that the district court erred in not recognizing that subcellular damage is a real, concrete bodily injury.

As noted above, the Price-Anderson Act creates a private right of action for claims arising out of “nuclear incidents.” A “nuclear incident” is defined as “any occurrence . . . causing, within or outside the United States, bodily injury, sickness, disease, or death, or loss of or damage to property . . . arising out of or resulting from the radioactive, toxic, explosive, or other hazardous properties of source, special nuclear, or byproduct material.” 42 U.S.C. § 2014(q). Courts are required to look to state law for the substantive rules to apply in deciding claims brought under the Act. *Day*, 3 F.3d at 154 n.1.

The key question before us, then, is whether Kentucky caselaw equates “subcellular damage” with “bodily injury.” This issue has been previously addressed by the Kentucky courts, but, as the plaintiffs note, the underlying facts have been slightly different. We must therefore make the “best prediction, even in the absence of direct state court precedent, of what the Kentucky Supreme Court would do if it were confronted with this question.” *Welsh v. United States*, 844 F.2d 1239, 1245 (6th Cir. 1988). To this end, we “may rely upon analogous cases and relevant dicta in the decisional law of the State’s highest court, opinions of the State’s intermediate appellate courts to the extent that they are persuasive indicia of State Supreme Court direction, and persuasive opinions from other jurisdictions, including the ‘majority rule.’” *Id.*

The Kentucky Supreme Court spoke most recently on the relevance of an undetectable physical injury in *Wood v. Wyeth-Ayerst Labs.*, 82 S.W.3d 849 (Ky. 2002). In that case, the plaintiff sued the makers of the appetite-suppressing diet drug fenfluramine, contending that her injury consisted of “‘significantly increased risk of serious injury and disease.’ She further claim[ed] that she and others [would] ‘probably . . . be required to pay sums to ascertain the existence, nature and extent of their injuries in the future.’” *Id.* at 851. In rejecting her claim, the court noted that it “has consistently held that a cause of action in tort requires a *present physical injury* to the plaintiff,” even in those cases “based on exposure to toxic or otherwise harmful substances.” *Id.* at 852 (emphasis added). The *Wood* court concluded that “[t]aken together, [Kentucky cases] lead to the conclusion that a plaintiff must have sustained some physical injury before a cause of action can accrue. To find otherwise would force us to stretch the limits of logic and ignore a long line of legal precedent.” *Id.* at 854.

A similar conclusion was reached by the Kentucky Supreme Court in *Capital Holding Corp. v. Bailey*, 873 S.W.2d 187 (Ky. 1994). In that case, a worker and his wife brought an action against a building owner due to asbestos exposure. They claimed mental and emotional suffering and the increased risk of future harm. In dismissing the claims, the court noted that “with a substance capable of causing cancer, just as with any other defective product, no cause of action accrues until the potentially harmful exposure actually causes injury that produces loss or damage.” *Id.* at 192 (quotation marks omitted). Thus, “the mere ingestion of a toxic substance does not constitute

sufficient physical harm upon which to base a claim for damages. We make no distinction between damages for ‘fear of’ cancer and damages for enhanced risk of developing the dreaded disease in the future.” *Id.* at 195. Kentucky cases are therefore clear in holding that a claim of an enhanced risk of illness or disease is insufficient to establish a “present physical injury.”

The plaintiffs are quick to note that *Wood* and *Capital Holding* are distinguishable in that those plaintiffs did not (and perhaps could not) point to any concrete physical damage. Instead, their claims were based upon the theory that their exposure might lead to an increased risk of disease. Here, in contrast, the plaintiffs argue that “[a]ppellants have much more than ‘potential’ consequences from ‘the mere ingestion’ or exposure to a toxic substance. There is ample proof of a physical/bodily injury and disease from their exposure to plutonium and neptunium. [Their] injuries are not speculative.”

The plaintiffs correctly point out that their counterparts in *Wood* and *Capital Holding* did not claim a physical injury. Nonetheless, the inhalation of asbestos—the toxic substance at issue in *Capital Holding*—does in fact cause recognized subclinical changes. *See, e.g., Ins. Co. of N. Am. v. Forty-Eight Insulations, Inc.*, 633 F.2d 1212, 1218 (6th Cir. 1980) (“Injury, in the sense that there is tissue damage, occurs shortly after the initial inhalation of asbestos fibers.”); *Buckley v. Metro-North Commuter R.R.*, 79 F.3d 1337, 1343 (2d Cir. 1996) (“When inhaled. . . asbestos fibers become imbedded in lung tissue and . . . cause subclinical changes to occur.”). So even though the plaintiffs in *Capital Holding* did not mention these subclinical changes in their complaint, the Kentucky Supreme Court was presumably aware that asbestos inhalation causes subclinical tissue damage to the lungs. Yet it did not recognize this damage as sufficient to constitute a “present physical injury.”

Wood and *Capital Holding*, moreover, highlight the public policy considerations made by the Kentucky Supreme Court that are directly relevant to the case before us. In *Wood*, for example, the court considered, and rejected, the plaintiffs’ claim for “medical monitoring,” and for damages for years of periodic hospital visits and medical tests to determine whether disease might be at an onset. 82 S.W.3d at 856. The court noted that “[a]nother shortcoming of medical monitoring is that . . . it is simply too far-reaching,” *id.* at 857, and cited a recent study which concluded that “[g]iven that negligently distributed or discharged toxins can be perceived to lie around every corner in the modern industrialized world, and their effects on risk levels are at best speculative, the potential tort claims involved are inherently limitless and endless.” *Id.* at 857-58 (citations omitted). These are the same public policy considerations implicated by the plaintiffs’ claims in the present case.

Wood and *Capital Holding* also make the important observation that a cause of action does not develop until actual harm is realized. *Wood*, for example, noted that in Kentucky a “plaintiff may bring only one claim for a given cause of action.” *Id.* at 858. In light of this limitation, it reasoned that “[t]hose who have ingested fenfluramine, but in whom no disease is yet manifest, will be forced to either forego medical evaluations or proceed with them at their own cost. Nevertheless, any other outcome would result in inordinate burdens for both the potential victim and the alleged negligent party.” *Id.* at 859. It concluded that “[b]ecause [the plaintiff] has shown no present physical injury, her cause of action under theories of negligence and strict liability have [sic] yet to accrue.” *Id.* *Capital Holding* similarly alluded to the fact that public policy require a demonstration of physical illness, noting that “[t]he effect of this order [denying plaintiffs’ claims] is to preserve plaintiffs’ rights to further pursue tort litigation if and when a ‘disease related to the asbestos exposure’ should manifest itself.” 873 S.W.2d at 189 (emphasis added).

Lower courts in Kentucky have also shied away from allowing exposure to dangerous chemicals to stand alone as a cause of action. In *Rockwell International Corp. v. Wilhite*, 143 S.W.3d 604 (Ky. Ct. App. 2003), for example, the plaintiffs were landowners whose property had been contaminated by minute quantities of polychlorinated biphenyls (PCBs) by the defendant. They brought suit, alleging that this exposure constituted trespass and a nuisance on their property.

In dismissing their claims, the Kentucky Court of Appeals relied in part on *Wood*. It noted the similarities between injury to property and injury to the body, commenting that in

the present case, the presence of PCBs currently on the land can be likened to Wood's already-ingested fenfluramine; although the land has been exposed to a substance, PCBs, no present injury to the land has been shown. In contrast, the landowners' theory that the presence of PCBs in itself should be recognized as an injury is analogous to Wood's position regarding her having ingested a potentially harmful or toxic substance (i.e., its mere presence in her body), a theory rejected by the Supreme Court. Were we to adopt the landowners' argument, it would result in an allowance of recovery for alleged injury to property in instances in which individuals who have ingested a toxic substance may not recover.

Id. at 623.

In concluding that the property owners had insufficient grounds upon which to state a claim, the court further noted *Wood's* public policy rationale that “[u]nfortunate as it may be, the harsh reality of life in the present day is that thousands, if not millions of people, have been exposed to and/or ingested potentially harmful or toxic substances.” *Id.* Although *Rockwell* is obviously a case about trespass, not about bodily injury, its dicta and public policy discussions nonetheless help clarify the leanings of the Kentucky courts. Combined with *Wood* and *Capital Holding*, this case suggests that a Kentucky court would be averse to allowing a claim based solely upon subcellular damage.

The district court also noted the similarities between this case and *Caputo v. Boston Edison Co.*, No. 88-2126-Z, 1990 U.S. Dist. LEXIS 8546, at *1 (D. Mass. 1990) (unpublished). In that case, a boiler-room worker at a nuclear power station was exposed to heavy doses of radiation. He later sued, alleging physical injury and emotional distress. Like the plaintiffs in the present case, he cited “cellular damage.” *Id.* at *5. Although the bulk of the court's attention was devoted to assessing the expert witnesses' credibility, the court concluded that “[e]ven if [the expert's] testimony were admissible, and accepting as true the allegations in plaintiff's affidavit, such *cellular damage does not rise to the level of physical injury as a matter of law* because nothing in the record relates them to any objective symptoms of illness or disease.” *Id.* at *11 (emphasis added).

We acknowledge, however, that a few cases have come down on the other side of the line. The plaintiffs can point to at least two cases that have refused to dismiss tort claims based upon subcellular damage. One is *Brafford v. Susquehanna Corp.*, 586 F. Supp. 14 (D. Colo. 1984), which is directly on point. In that case, the plaintiffs were exposed to waste materials emitted by a uranium milling facility. The trial judge declined to enter summary judgment in favor of the defendants, noting that “I fully understand the impact of defendant's charge that plaintiffs' characterization of subcellular changes as a present injury is an attempt to circumvent the present injury requirement.” *Id.* at 18. Ultimately, however, the court concluded that “plaintiffs have at least raised a question of fact with respect to whether a present injury in the form of chromosome damage was suffered by the plaintiffs as a result of their exposure to the radiation emitted from the mill tailings.” *Id.*

The other case is *Werlein v. United States*, 746 F.Supp. 887, 901 (D. Minn. 1990), where the plaintiffs were exposed to water contaminated by the defendants. Like the plaintiffs in the present case, the plaintiffs in *Werlein* claimed “chromosomal breakage” and “damage to the cardiovascular and immunal systems.” *Id.* In a terse discussion, the court concluded that “[t]he effect of volatile organic compounds on the human body is a subtle, complex matter. It is for the trier of fact, aided by expert testimony, to determine whether plaintiffs have suffered present harm.” *Id.* But we are not persuaded by either of these opinions, both because they are not consistent with Kentucky law

and because the issue of whether chromosome damage constitutes a “present physical injury” is essentially a legal question, not a factual one.

Ultimately, however, the most persuasive reason to deny the plaintiffs’ claims in the present case comes from public policy considerations, many of which have already been articulated by the Kentucky courts. There are three primary concerns with the plaintiffs’ position. The first was noted by the court in *Wood*: “Given that negligently distributed or discharged toxins can be perceived to lie around every corner in the modern industrialized world, and their effects on risk levels are at best speculative, the potential tort claims involved are inherently limitless and endless.” 82 S.W.3d at 857-58 (citations omitted). Accepting the plaintiffs’ claim would therefore throw open the possibility of litigation by any person experiencing even the most benign subcellular damage. Based upon the average American’s exposure to chemically processed foods, toxic fumes, genetically modified fruits and vegetables, mercury-laden fish, and hormonally treated chicken and beef, this might encompass a very large percentage of the total population. Nowhere in their arguments do the plaintiffs address these “floodgate” concerns.

Second, allowing this suit to proceed would be of little service to the plaintiffs themselves, particularly in the long run. Kentucky has a “one claim” rule, which limits plaintiffs in tort cases to one chance in which to have their grievances redressed. If this suit is allowed to proceed, the plaintiffs would be able to claim relief for only a nominal injury. After all, as the district court observed, “none of the Plaintiffs is ‘sick.’” But they would be left adrift without a legal remedy and without recompense should they later develop a truly debilitating disease. Allowing this suit to proceed would thus do a great disservice to those plaintiffs who might in fact later come down with the very diseases they so rightly fear.

Finally, the plaintiffs fail to explain how damages could presently be calculated. Losses resulting from salient physical diseases such as cancer or asbestosis are at least quantifiable, and courts have familiarized themselves with methods of computing the associated costs of medical care, absences from work, and physical pain. Here, however, the plaintiffs have suggested no mechanisms for calculating losses resulting from subcellular damage. Indeed, the injuries claimed to date have caused no financial losses or impairments. If any damages were to be assessed, they would fall in the realm of the purely theoretical, and would be nearly impossible for a trier of fact to accurately assess.

Although the plaintiffs contend that they have real and concrete physical injuries, the evidence shows that their DNA damage is harmful only insofar as it is predictive of future disease. The plaintiffs have amply demonstrated that chromosomal damage is directly linked with an increased likelihood of cancer. Indeed, plaintiff Charles Ramsey testified that his main fear was not present injury, but that he was “worried to death what [the radiation] is doing to me . . . 10, 20 years from now.” In this sense, the plaintiffs are similarly situated to the plaintiffs in *Wood* and *Capital Holding*, whose primary claims were that their exposure to toxic substances had created an increased risk of disease. Those claims were dismissed by the Kentucky Supreme Court because they were premature. The claims of the plaintiffs here are likewise premature. *See Wood*, 82 S.W.3d at 859 (“Because [the plaintiff] has shown no present physical injury, her cause[s] of action under theories of negligence and strict liability have yet to accrue.”). In sum, Kentucky caselaw provides sufficient guidance for us to conclude that, if this case were to be decided in that state’s courts, the public policy considerations and the lack of any present physical illness would require the grant of summary judgment in favor of the defendants.

E. Plaintiffs' *Bivens* claims

Plaintiff Classes II-IV brought additional constitutional claims against all of the defendants under *Bivens v. Six Unknown Named Agents of Federal Bureau of Narcotics*, 403 U.S. 388 (1971) (creating a cause of action against federal officials for constitutional violations). The district court dismissed these claims, relying on the Supreme Court case of *Correctional Services Corp. v. Malesko*, 534 U.S. 61 (2001) (declining to extend *Bivens* to a suit against a private contractor).

In this appeal, the plaintiffs claim that the district court erred because (1) the court relied on dicta in *Malesko*, (2) *Bivens* has a wider application than solely where the plaintiff lacks any "alternative remedy for harms caused by unconstitutional conduct," and (3) *Bivens* does not bar equitable claims. The defendant-operators respond by charging that the plaintiffs are untimely in their appeal of the district court's rejection of their *Bivens* claims. GE further claims that, because the Price-Anderson Act is the exclusive remedy against operators and suppliers of nuclear reactors, Congress has already established a regulatory regime that precludes *Bivens*'s application.

With regard to the timeliness defense, the district court issued its order denying the plaintiffs' *Bivens* claims against GE on March 15, 2002, and against the defendant-operators on May 15, 2002. This appeal was taken on August 3, 2003, approximately 14 months after these orders were handed down. Generally, in civil cases, "the notice of appeal must be filed . . . within 30 days after the judgment or order appealed from is entered." Fed. R. App. P. 4(a)(1). But Rule 58 requires that a judgment be set forth in a separate document. Fed. R. Civ. P. 58. In this case, the interim orders were not accompanied by a separate judgment in accordance with Rule 58. The final judgment that dismissed all of the plaintiffs' claims was not entered until July 29, 2003. Because the plaintiffs filed their notice to appeal on August 6, 2003, their appeal falls within the 30-day statute of limitations and is therefore timely.

GE's contention that the Price-Anderson Act preempts a *Bivens* claim has greater merit. The Supreme Court has noted that "[w]hen the design of a Government program suggests that Congress has provided what it considers adequate remedial mechanisms for constitutional violations that may occur in the course of its administration, we have not created additional *Bivens* remedies." *Schweiker v. Chilicky*, 487 U.S. 412, 423 (1988); see also *Bivens*, 403 U.S. at 397 (noting that a *Bivens* remedy would not be available in cases of "explicit Congressional declaration" creating an alternative scheme).

In *Schweiker*, for example, the Court declined to entertain a *Bivens* claim brought by plaintiffs claiming disability benefits. It noted the extensive administrative framework that already existed to hear disability claims, and concluded that "Congress is the body charged with making the inevitable compromises required in the design of a massive and complex welfare benefits program. Congress has discharged that responsibility to the extent that it affects the case before us, and we see no legal basis that would allow us to revise its decision." *Id.* at 429 (citations omitted).

Ultimately, therefore, where "the design of a Government program suggests that Congress has provided what it considers adequate remedial mechanisms for constitutional violations that may occur in the course of its administration, we have not created additional *Bivens* remedies." *Id.* at 423; see also *Bush v. Lucas*, 462 U.S. 367 (1983) ("The federal courts' statutory jurisdiction to decide federal questions confers adequate power to award damages to the victim of a constitutional violation. When Congress provides an alternative remedy, it may, of course, indicate its intent, by statutory language, by clear legislative history, or perhaps even by the statutory remedy itself, that the courts' power should not be exercised."); *Fishburn v. Brown*, 125 F.3d 979, 983 (6th Cir. 1997) ("Since Congress has created statutory provisions that enabled [the plaintiff] to challenge the [government's] actions, she does not have an actionable *Bivens* claim for a violation of due process" with regard to her unlawful seizure claim).

The key question, therefore, is whether the Price-Anderson statutory framework excludes a *Bivens* claim. An examination of the legislative history behind the Price-Anderson Act indicates that Congress indisputably intended for the Act to be the primary remedial mechanism for claims arising out of “nuclear incidents.” The Senate, when considering the 1988 amendments to the Act, stated that the purpose behind the Price-Anderson Act was “to assure adequate public compensation in the case of a nuclear accident; and to set a limit on the liability of private industry to remove a major deterrent to private participation in the development of nuclear energy.” S. Rep. 100-70 (1988). It noted that

[t]he Price-Anderson system is a comprehensive, compensation-oriented system of liability insurance for Department of Energy contractors and Nuclear Regulatory Commission licensees operating nuclear facilities. Under the Price-Anderson system, there is a ready source of funds available to compensate the public after an accident, and the channeling of liability to a single entity and waiver of defenses insures that protracted litigation will be avoided. That is, the Price-Anderson Act provides a type of “no fault” insurance, by which all liability after an accident is assumed to rest with the facility operator, even though other parties (such as subcontractors or suppliers) might be liable under conventional tort principles. This “omnibus” feature permits a more unified and efficient approach to processing and settlement of claims, thus allowing quick compensation to the public from the pool of funds set up by the Price-Anderson system. If damages exceed the limit established by law, the Price-Anderson Act would require Congress to review the situation and determine what action should be taken to make additional funds available to compensate the public.

Id.

In addition, a 2003 Senate Committee Report reauthorizing the Act commented that the Act’s impetus was “to ensure that adequate funds would be available to compensate victims of a nuclear accident. [Congress] also recognized that the risk of extraordinary liability that companies would incur if a nuclear accident were to happen would render insurance costs prohibitively high, and thwart the development of nuclear energy.” S. Rep. No. 108-218 (2003). That report also notes that “[a]s currently constituted, Price-Anderson places a cap on liability for commercial nuclear facilities and activities licensed by the U.S. Nuclear Regulatory Commission, and allows for deferral of a portion of the payments such licensees must make.” *Id.*

Another committee report explains that “the Price-Anderson Act (PAA) provides for compensation of injured parties in the event of a nuclear accident and sets a maximum liability amount per accident.” H.R. Rep. No. 107-299 (2001); *see also* David M. Rocchio, *The Price-Anderson Act: Allocation of Extraordinary Risk of Nuclear Generated Electricity*, 14 B.C. Envtl. Aff. L. Rev. 521, 523 (1987) (“In 1957, Congress passed the Price-Anderson Act in an attempt to guarantee that the fledgling private nuclear power industry could develop nuclear power without assuming the high risk involved.”). These comments suggest that Congress viewed the Price-Anderson Act as the key federal mechanism for containing and limiting the legal costs arising out of nuclear incidents.

The plaintiffs counter that the primary purpose of the Price-Anderson Act is not to limit legal liability, but to ensure that nuclear facilities have adequate insurance policies. Even if true, both parties agree that the Act, at a basic level, regulates the ability of individuals to sue as a result of a “nuclear incident.” It strictly defines “public liability” to include “any legal liability arising out of or resulting from a nuclear incident or precautionary evacuation.” 42 U.S.C. § 2014(w) (emphasis added). Because Supreme Court precedent clearly calls for judicial restraint where “Congress has provided what it considers adequate remedial mechanisms for constitutional violations,” and because

the Price-Anderson Act constitutes such an adequate remedial mechanism, we find no basis for the plaintiffs to bring their *Bivens* claims. See *Nieman v. NLO, Inc.*, 108 F.3d 1546, 1553 (6th Cir. 1997) (“Nieman can sue under the Price-Anderson Act, as amended, or not at all.”). For these reasons, the plaintiffs’ *Bivens* claims were appropriately dismissed by the district court.

F. The plaintiffs’ motion to amend their *Bivens* complaint

The plaintiffs claim that the district court erred when it denied them the ability to amend their *Bivens* complaint to explicitly include claims for equitable relief. Based upon our conclusion in Part II.E. above that the Price-Anderson Act is a wide-reaching statutory scheme that prevents federal courts from entertaining *Bivens* actions for “nuclear incidents,” the plaintiffs’ argument on this point is moot.

G. Confidential work-product

The final issue of contention between the parties is the disposition of a sensitive piece of attorney-client work product produced by the defendants during the course of discovery, consisting of correspondence that discussed managerial attempts to keep workers ignorant of the dangerous radiation exposure. Under the Agreed Protective Order signed by all the parties, if a party inadvertently produced a document later found to be protected by the attorney-client privilege, “[u]pon request of the producing party, the inadvertently produced document(s) or thing(s) and all copies, notes, compilations, tabulations, analysis or summaries thereof shall be promptly returned to the producing party.” The plaintiffs, however, refused to hand over the document after several requests, prompting the magistrate judge involved to order its return.

The plaintiffs now argue that the attorney-client privilege is not applicable because the document will “expose the fraud being perpetrated on the PGDP workers. Thus, the crime-fraud exception to the privilege applies.” They further argue that Union Carbide waived its attorney-client privilege when it handed the document over.

The plaintiffs’ arguments are unpersuasive. In the grand jury context, the test for claiming the crime-fraud exception is twofold: “First, the government must make a *prima facie* showing that a sufficiently serious crime or fraud occurred to defeat the privilege; second, the government must establish some relationship between the communication at issue and the *prima facie* violation.” *In re Antitrust Grand Jury*, 805 F.2d 155, 164 (6th Cir. 1984).

We have found no caselaw relating to private citizens seeking to claim the crime-fraud exception as a basis to keep privileged information. Moreover, the plaintiffs fail to cite any facts to support their argument that the document exposes criminal fraud perpetrated by the defendants. They also fail to explain how this one particular document unlocks the secret to the defendants’ alleged “crime.”

Finally, we are not persuaded by the argument that the defendants waived their privilege when producing the document. The Agreed Protective Order signed by all the parties was clear in stating that a producing party waived no rights in the event a privileged document was accidentally produced. In sum, the district court did not err in granting the defendants’ request that the plaintiffs return this document.

III. CONCLUSION

For all of the reasons set forth above, we **AFFIRM** the judgment of the district court.