
Washington v. Chu: A Positive Sign for Hanford Cleanup?

INTRODUCTION

In *Washington v. Chu*,¹ the Ninth Circuit rebuked the Department of Energy (DOE) for trying to bypass storage, treatment, and disposal requirements for materials classified as transuranic mixed waste (TRUM) at the Hanford Nuclear Reservation. DOE claimed that TRUM designated for eventual disposal at the Waste Isolation Pilot Plant (WIPP) fell within the legislative exemption for waste stored at WIPP itself.² However, the court examined the plain language, statutory context, character, and legislative history of the WIPP exemption and determined that Congress clearly intended to create a site-specific exemption for waste at WIPP only.³

I. HANFORD SITE BACKGROUND

A 586-square-mile area adjacent to the Columbia River in southeastern Washington state, Hanford is home to a host of radioactive and hazardous wastes and has the dubious honor of being the most contaminated locality in the United States.⁴ It was built as part of the Manhattan Project by the Army Corps of Engineers during the early 1940s and produced seventy-three tons of plutonium over its active lifespan of forty-four years.⁵ Most of the reactors were cooled directly by Columbia River water, which was then pumped back into the river after a brief period of settling,⁶ resulting in daily discharges of thousands of

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1. See *Washington v. Chu*, 558 F.3d 1036, 1045–47 (9th Cir. 2009).

2. *Id.* at 1038, 1042 n.14.

3. *Id.* at 1043.

4. See Scott Learn, *Despite Billions Spent on Cleanup, Hanford Won't be Clean for Thousands of Years*, THE OREGONIAN, Feb. 9, 2010, available at http://www.oregonlive.com/news/index.ssf/2010/02/despite_billions_spent_on_clea.html.

5. See LAURA HANSON, RADIOACTIVE WASTE CONTAMINATION OF SOIL AND GROUNDWATER AT THE HANFORD SITE 2 (2000), available at http://www.agls.uidaho.edu/etox/resources/case_studies/HANFORD.PDF.

6. See M. S. GERBER, THE PLUTONIUM PRODUCTION STORY AT THE HANFORD SITE: PROCESSES AND FACILITIES HISTORY 2-1 (1996).

curies of radioactive material.⁷ On Hanford's central plateau, nuclear fuel rods were reprocessed to isolate bomb-grade plutonium⁸ in a chemically intensive process that used strong acids and generated considerable quantities of liquid waste.⁹ Over time, approximately 440 billion gallons of low-level waste were released directly into the soil, while higher-level waste was largely contained in leak-prone single-walled underground storage tanks.¹⁰ Significant atmospheric discharges also took place, including accidental and intentional releases of radioactive iodine.¹¹ Despite major contamination of air, water, and land, the public was generally unaware of these emissions and the risks associated with them while Hanford was in active operation.¹² Unsurprisingly, the negative health effects on past and present Hanford employees and members of the public are ongoing subjects of study.¹³

Current levels of radioactive inputs into the environment are much lower than during peak activity in the mid-1960s,¹⁴ yet Hanford continues to face severe problems. More than two-thirds of DOE's highly radioactive waste is located here.¹⁵ Subsurface waste plumes have resulted in significant groundwater pollution over at least 80 square miles.¹⁶ Unfortunately, much of the waste in tanks, soil, and groundwater

7. See OR. HEALTH DIV. RADIATION PROT. SERVS., ENVIRONMENTAL RADIOLOGICAL SURVEILLANCE REPORT ON OREGON SURFACE WATERS 1961-1993, at 3 (1994) [hereinafter OREGON HEALTH]. The current upstream background level is about 6,000 curies per year. See HANSON, *supra* note 5, at 21.

8. See Department of Energy, Hanford, Canyon Facilities (Jan. 18, 2010), <http://www.hanford.gov/page.cfm/CanyonFacilities>.

9. See GERBER, *supra* note 6, at 4-6.

10. See EPA, Hanford 200-Area, <http://yosemite.epa.gov/R10/CLEANUP.NSF/sites/hanford2!OpenDocument&ExpandSection=1> (last visited Mar. 5, 2010).

11. See Richard A. Du Bey et al., 'Downwinders' Still Press Their Case against Hanford, SEATTLE DAILY JOURNAL OF COMMERCE, Aug. 20, 1998, available at <http://www.djc.com/special/enviro98/10043971.htm>. The "Green Run" was an intentional (and secret) release of "about 8,000 curies of radioactive iodine on Dec. 2, 1949." In comparison, the 1979 accident at Three Mile Island released only 15-24 curies.

12. See *id.* Much of the information only came to light in 1986, when 400 documents were made public.

13. See *id.* Additionally, radioactive hazards can persist and even worsen over several hundred thousand years, making risks to human and environmental health hard to quantify. See Office of Civilian Radioactive Waste Management, Fact Sheet: Americans' Average Radiation Exposure, <http://www.ocrwm.doe.gov/factsheets/doeymp0337.shtml> (last visited Mar. 18, 2010).

14. See OREGON HEALTH, *supra* note 7, at 10.

15. See HANSON, *supra* note 5, at 3.

16. See DEP'T OF ECOLOGY, STATE OF WASH., CLEANING HANFORD GROUNDWATER 1-2 (2008), available at <http://www.ecy.wa.gov/programs/nwp/pdf/Groundwater/gwbrochure2008.pdf>. Some plumes have already reached the Columbia River. See *id.*

is poorly characterized and chemically complex, making treatment and storage decisions more difficult.¹⁷

Unique geological and hydrological factors at the Hanford site promote migration of contaminant plumes and make their paths difficult to predict. While fluid flow patterns generally show movement towards the Columbia River to the north and east,¹⁸ Hanford overlies heterogeneous glacial and fluvial sediments,¹⁹ and the complex spatial arrangement of these differentially permeable gravels, sands, and silts makes detailed groundwater flow difficult to predict.²⁰ Due to large variations in the depth (10–200 feet) of the groundwater table, transport mechanisms in both groundwater and the unsaturated zone above it are important.²¹ Specific contaminants travel at different rates depending on interactions with co-pollutants and oxic sediments.²²

The Hanford site was selected to house reactors and enrichment facilities according to criteria such as sheer size, remoteness, a plentiful water supply, and “ground that could bear heavy loads.”²³ Regrettably, the hydrologic situation described above was not considered when the site was chosen.²⁴ In contrast, the location of WIPP in southeastern New Mexico was selected with specific hydrologic and geologic considerations in mind.²⁵ DOE also considered the properties of the waste that could

17. See HANSON, *supra* note 5, at 20. Identification and chemical separation of complex wastes must occur before long-term storage in order to keep “hazardous chemical reactions between incompatible compounds” from occurring. *See id.*

18. See U.S. DEP’T OF ENERGY, HANFORD SITE GROUNDWATER MONITORING FOR FISCAL YEAR 2007, at 2.1-1 (2008), available at <http://www.hanford.gov/rl/uploadfiles/GWRRep07/>.

19. See G. W. Gee et al., *Hanford Site Vadose Zone Studies: An Overview*, 6 VADOSE ZONE J. 899, 900 (2007).

20. *See id.* at 899, 903.

21. See BRUCE BJORNSTAD, PAC. NW. NAT. LAB., SAMPLING AND HYDROGEOLOGY OF THE VADOSE ZONE BENEATH THE 300 AREA PROCESS PONDS 2 (2004), available at http://www.pnl.gov/main/publications/external/technical_reports/PNNL-14834.pdf; HANSON, *supra* note 5, at 16.

22. See Gee et al., *supra* note 19, at 899, 903.

23. See M. S. GERBER, LEGEND AND LEGACY: FIFTY YEARS OF DEFENSE PRODUCTION AT THE HANFORD SITE 6 (1992).

24. *See id.*

25. See U.S. DEP’T OF ENERGY, WASTE ISOLATION PILOT PLANT, WHY SALT WAS SELECTED AS A DISPOSAL MEDIUM (2003), available at <http://www.wipp.energy.gov/fctshts/salt.pdf>. The disposal site is 2150 feet below the ground surface within a stable salt formation about 2000 feet thick. *See* EPA, WIPP RECERTIFICATION FACT SHEET NO. 1, at 1 (2005), available at www.epa.gov/rpdweb00/docs/wipp/recertification/fs1-recert.pdf. DOE chose this location knowing that, due to plasticity effects, salt deforms to fill fractures that develop over time, theoretically resulting in an impermeable and long-lasting tomb. *See* U.S. DEPARTMENT OF ENERGY, *supra* note 25, at 1–2. *But see* Arjun Makhijani & Scott Saleska, High-Level Dollars, Low-Level Sense, Chapter 3, *Transuranic Wastes at WIPP* (1992), <http://www.ieer.org/pubs/highlv3e.html> (noting a danger of dissolution if the salt comes in

reasonably be disposed of at WIPP.²⁶ This type of site-specific, waste-specific analysis is crucial to making informed storage and disposal decisions.

II. TRUM AND THE LAW GOVERNING ITS TREATMENT, STORAGE, AND DISPOSAL AT HANFORD

TRUM is a mixture of mostly solid materials “contaminated during the production and reprocessing of plutonium . . . with radioactive elements . . . carr[ying] a periodic table value greater than uranium . . . and non-radioactive hazardous waste, such as solvents or heavy metals.”²⁷ While TRUM has lower levels of radioactivity than spent nuclear fuel or high-level radioactive waste, it is toxic and poses a long-term risk to both human and environmental health.²⁸ Because of this dual hazard, TRUM at Hanford is governed by both the Atomic Energy Act of 1954 and Washington State’s Hazardous Waste Management Act (HWMA), which operates instead of the Federal Resource Conservation and Recovery Act (RCRA) under Environmental Protection Agency (EPA) authorization.²⁹ At the time of the *Chu* trial, “shallow, unlined soil trenches” on the Hanford Nuclear Reservation contained “at least 37,000 drums and 1,200 large boxes of [post-1970] suspected TRUM in ‘retrievable storage,’” which were waiting to undergo treatment or proper disposal.³⁰ HWMA refers to the land disposal restrictions enumerated by RCRA,³¹ which prohibit land disposal of hazardous waste, including TRUM, unless it is pretreated to minimize “threats to human health and the environment” or where there exists “a reasonable degree of certainty, that there will be no migration of hazardous constituents from the disposal unit or injection zone for as long as the waste remains hazardous.”³²

contact with water; pressurized pockets of brine are thought to exist near the WIPP storage rooms). No perfect disposal location exists.

26. See Waste Isolation Pilot Plant Land Withdrawal Act of 1992, Pub. L. No. 102-579, §§ 7, 12, 106 Stat. 4777, 4785, 4791 (1992) (allowing disposal of transuranic waste but not high-level radioactive waste).

27. See *Washington v. Chu*, 558 F.3d 1036, 1038 (9th Cir. 2009). TRUM-contaminated materials include “tools, equipment, protective clothing, rags, graphite, glass, and other material.” *Id.*

28. See *id.*

29. See *id.* at 1038, 1039 n.1–2; see also WASH. REV. CODE §§ 70.105.020, 70.105.030 (2010); WASH. ADMIN. CODE 173-303-140(2)(a) (2009).

30. See *Chu*, 558 F.3d at 1038. Before 1970, TRUM at Hanford was disposed of like solid, low-level radioactive waste, for example, packaged in cardboard boxes and dumped in trenches, never intended for retrieval. See HANSON, *supra* note 5, at 3–4.

31. See WASH. ADMIN. CODE 173-303-140(2)(a).

32. See, e.g., Resource Conservation and Recovery Act, 42 U.S.C. § 6924(g)(5), (m) (2006). The Act also contains safeguards against stockpiling hazardous wastes subject to the land

III. ANALYSIS

In *Chu*, DOE argued that TRUM at Hanford designated for eventual disposal at WIPP is covered by the exemption in the WIPP Land Withdrawal Amendment Act of 1996.³³ The Ninth Circuit examined DOE's claims—that the plain language of the WIPP exemption unambiguously compelled its far-reaching interpretation or, in the alternative, its interpretation was nonetheless entitled to significant deference—and found them to be without support.³⁴ This examination entailed analysis of (1) the exemption's plain language, (2) statutory context, (3) the nature of the exemption, and (4) legislative history.³⁵

First, the court looked at the plain language of the exemption. Read in a contextual vacuum, DOE's argument that the WIPP exemption applies to all TRUM “designated . . . for disposal at WIPP” seems reasonable.³⁶ The words of the exemption do not explicitly require that the waste in question currently resides at WIPP, only that the Secretary of DOE has designated it for disposal there.

The *Chu* court recognized this ambiguity in plain meaning³⁷ but echoed the Supreme Court's warning that “a provision that may seem ambiguous in isolation is often clarified by the remainder of the statutory scheme . . . because only one of the permissible meanings produces a substantive effect that is compatible with the rest of the law.”³⁸ Hence, enlarging the scope of analysis to encompass the entire section, the court showed that, in context, the exemption logically extends only to waste *at*

disposal prohibitions—only allowing storage of an amount of material that is “necessary to facilitate proper recovery, treatment or disposal” and limiting the length of time waste may be stored at a particular location. *See id.* § 6924(j); 40 C.F.R. § 268.50(b)–(c) (2006); *see also* Hazardous Waste Treatment Council v. EPA, 886 F.2d 355, 357 (D.C. Cir. 1989) (explaining that Congress “opted in large part for a ‘treat as you go’ regulatory regime”).

33. *See Chu*, 558 F.3d at 1038.

34. *See id.* at 1042–49. Application of *Chevron* deference was rejected for two reasons: (1) the statute was not ambiguous, so DOE's alternative interpretation was inconsequential, and (2) even if the statute had been ambiguous, it was one DOE had to abide by, not one it was responsible for administering, so no deference was required. *See id.* at 1043, 1043 n.15; *see also* *Chevron U.S.A. Inc. v. Natural Res. Def. Council, Inc.*, 467 U.S. 837, 843 (1984); *Am. Fed'n of Gov't Employees v. Fed. Labor Relations Auth.*, 204 F.3d 1272, 1274–75 (9th Cir. 2000).

35. *See Chu*, 558 F.3d at 1043–49.

36. With respect to [TRUM] designated by the Secretary for disposal at WIPP, such “waste is exempt from treatment standards promulgated pursuant to section 3004(m) of the Solid Waste Disposal Act (42 U.S.C. [§] 6924(m)) and shall not be subject to the land disposal prohibitions in section 3004(d), (e), (f), and (g) of the Solid Waste Disposal Act.” Waste Isolation Pilot Plant Land Withdrawal Act of 1992, Pub. L. No. 102-579, § 9(a)(1), 106 Stat. 4777, 4788 (1992), *as amended* by Waste Isolation Pilot Plant Land Withdrawal Act Amendments of 1996, Pub. L. No. 104-201, § 3188(a), 110 Stat. 2422, 2853 (1996).

37. *Chu*, 558 F.3d at 1043.

38. *See United Sav. Ass'n v. Timbers of Inwood Forest Assoc.*, 484 U.S. 365, 371 (1988).

WIPP.³⁹ Section 9 of the amended Waste Isolation Pilot Plant Land Withdrawal Act is entitled “Compliance with Environmental Laws and Regulations,” and 9(a)(1) begins by stating that the section is applicable “with respect to WIPP.”⁴⁰ According to the court:

[t]he plain and undisputed interpretation of [subsection 9(a)(1)] is that the WIPP facility must be in compliance with the enumerated environmental regulations. The [exemption] . . . is a *sub-part* of Section 9(a)[1]—“with respect to WIPP.” Congress’s decision to place the designation exemption at this location indicates that it meant for the designation exemption to apply only “with respect to WIPP.”⁴¹

Enlarging the scope of analysis still farther, the WIPP Land Withdrawal Act of 1992 and its 1996 amendments are wholly directed to “the ongoing establishment of the WIPP site as a depository for transuranic waste . . . [t]he language and design of the statute as amended pertain solely to WIPP.”⁴² The court found no room in the statute for DOE’s interpretation.⁴³

Next the court demonstrated that the character of the exemption itself belies DOE’s expansive interpretation.⁴⁴ It excuses TRUM at WIPP from treatment standards that are otherwise applicable to “wastes subject to land disposal prohibitions.”⁴⁵ Absent legislative exceptions like this one, the prohibitions can be avoided only when risks to human and environmental health are demonstrably low—when waste is pretreated or unlikely to migrate “for as long as the waste remains hazardous.”⁴⁶ A “no-migration” determination is by its nature both location-specific and waste-specific, because each site has different geologic and hydrologic properties, and wastes interact with the physical and chemical environment in very different ways.⁴⁷ Therefore, allowing TRUM stored at locations other than WIPP to escape land disposal prohibitions based on designation for eventual disposal there would subvert the prohibitions’ protective purpose.⁴⁸

Finally, examination of the legislative history of the WIPP exemption buttressed this point. With a “no-migration” determination petition for WIPP stuck awaiting EPA approval, Congress and DOE

39. *Chu*, 558 F.3d at 1043–45.

40. Waste Isolation Pilot Plant Land Withdrawal Act, § 9.

41. *See Chu*, 558 F.3d at 1045.

42. *See id.* at 1046.

43. *See id.*

44. *See id.*

45. *See* Resource Conservation and Recovery Act, 42 U.S.C. § 6924(m) (2006).

46. *See, e.g., id.* § 6924(g)(5), (m).

47. *See Chu*, 558 F.3d at 1046.

48. *See, e.g.,* Resource Conservation and Recovery Act, § 6924(d)(1); *see also Chu*, 558 F.3d at 1046–47.

were concerned that “compliance with numerous environmental regulations had delayed the commencement of waste disposal at WIPP.”⁴⁹ So, after EPA suggested that the prohibitions of RCRA were redundant, Congress incorporated this reasoning into its drafts of the 1996 Amendments.⁵⁰ When the Act passed, DOE’s petition for a no-migration determination became moot and was terminated by the EPA.⁵¹ Based on this history, the court concluded that Congress amended section 9(a)(1) with the specific intention of “remov[ing] regulatory obstacles to disposal once the designated waste arrives at WIPP.”⁵²

CONCLUSION

In *Washington v. Chu*, the Ninth Circuit sensibly found that a location-specific TRUM treatment, storage, and disposal exemption passed by Congress for WIPP—a repository located thousands of feet underground in a low-permeability salt formation in New Mexico—cannot reasonably be extended to similar waste kept in unlined trenches in highly permeable soils of the Hanford Nuclear Reservation near the Columbia River.

The practical ramifications of this decision should logically include accelerated removal of drums of TRUM from temporary burial locations at Hanford followed by assessment and final disposal at WIPP.⁵³ However, shipments to WIPP ceased completely in September of 2008 (six months before the resolution of *Chu*), with DOE blaming the bad economy for its decision to prioritize other Hanford cleanup projects ahead of dealing with TRUM.⁵⁴ Shipments were not scheduled to restart until 2014; but, in response to a recent influx of stimulus funds,⁵⁵ DOE recommenced shipping in March and, as of early April, was shipping at a

49. See *Chu*, 558 F.3d at 1047–48.

50. See *id.* at 1048. EPA said the Atomic Energy Act—which regulated the radioactive components of the waste—and other regulations would adequately protect human health and the environment. See *id.* This logic pervaded testimony at the lone hearing held to discuss the 1996 WIPP Amendments. See *id.* at 1049.

51. See *id.*; see also Termination of Review of Department of Energy Petition to EPA for a No-Migration Determination for the Waste Isolation Pilot Plant (WIPP) Under the Resource Conservation and Recovery Act, 61 Fed. Reg. 60,704 (1996).

52. *Chu*, 558 F.3d at 1047.

53. See Press Release, Washington Department of Ecology, Federal Court Confirms State Authority Over Mixed Waste at Hanford (Mar. 11, 2009), available at <http://www.ecy.wa.gov/news/2009news/2009-060.html>.

54. See Shannon Dininny, *Hanford to Restart Nuclear Waste Shipments*, SEATTLE POST-INTELLIGENCER, Feb. 26, 2010, available at http://seattletimes.nwsources.com/html/localnews/2011203256_apwanuclearwaste.html.

55. See *id.*

rate of five loads per week.⁵⁶ Just how quickly waste transfer will continue remains to be seen. Nevertheless, this may be a positive sign of forward movement in the delay prone⁵⁷ and extremely complex Hanford cleanup process.

Regardless, with the Obama administration sending mixed signals on nuclear power—on the one hand removing Yucca Mountain from consideration as a high-level nuclear waste repository⁵⁸ while on the other hand actively pushing new nuclear power plants as a “green” energy solution⁵⁹—Hanford and WIPP are certain to experience new and renewed pressures.⁶⁰ In the absence of truly safe methods of disposal, we should seriously question the wisdom of embarking on a policy of continuing to expand nuclear waste production. As Washington State and DOE must realize, we’re still struggling to address contamination associated with the first generation of nuclear reactors.

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56. See E-mail from WIPP Information Center, infocntr@wipp.ws, to Nell Green Nysten (Apr. 8, 2010) (on file with author).

57. See, e.g., John Stang, *Hanford Gets Deadlines to Fix Underground Contamination*, SEATTLE POST-INTELLIGENCER, Sept. 8, 2009, available at http://www.seattlepi.com/local/409854_hanford08.html; Lisa Stiffler, *Troubled Hanford Cleanup Has State Mulling Lawsuit*, SEATTLE POST-INTELLIGENCER, Mar. 21, 2008, available at http://www.seattlepi.com/local/355924_hanford21.html.

58. See Editorial, *Abandoning Yucca Mountain Project a Costly and Irresponsible Blunder*, THE DAILY NEWS, Mar. 5, 2010, available at http://www.tdn.com/news/opinion/article_7bab5d5e-27f1-11df-991f-001cc4c03286.html.

59. See Chip Ward, *Nuclear Power—Not a Green Option*, L.A. TIMES, Mar. 5, 2010, available at <http://www.latimes.com/news/opinion/commentary/la-oe-ward5-2010mar05,0,33620,print.story>.

60. See Kimberley Johnson, *Nuclear Waste Won't Go to Yucca Mountain*, AOL NEWS (Mar. 5, 2010), <http://www.aolnews.com/nation/article/nuclear-waste-wont-go-to-yucca-mountain/19383204>; Sue Vorenberg, *Ten Years in Operation, WIPP Boasts Sterling Safety Record, Continued Support*, THE NEW MEXICAN, Mar. 29, 2009, available at <http://www.santafenewmexican.com/Local%20News/WIPP-wonders>.

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