
**Title 40 CFR Part 191
Subparts B and C
Compliance Recertification Application 2019
for the
Waste Isolation Pilot Plant**

**Results of Compliance Assessments
(40 CFR 194.55)**



**United States Department of Energy
Waste Isolation Pilot Plant**

Carlsbad Field Office
Carlsbad, New Mexico

Compliance Recertification Application 2019
Results of Compliance Assessments
(40 CFR 194.55)

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Acronyms and Abbreviations

CCA	Compliance Certification Application
CFR	Code of Federal Regulations
CRA	Compliance Recertification Application
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
mrem	millirem
PA	performance assessment
USDW	underground source of drinking water
WIPP	Waste Isolation Pilot Plant

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55.0 Results of Compliance Assessments (40 CFR 194.55)

55.1 Requirements

§ 194.55 Results of Compliance Assessments

- (a) Compliance assessments shall consider and document uncertainty in the performance of the disposal system.
- (b) Probability distributions for uncertain disposal system parameter values used in compliance assessments shall be developed and documented in any compliance application.
- (c) Computational techniques which draw random samples from across the entire range of values of each probability distribution developed pursuant to paragraph (b) of this section shall be used to generate a range of:
- (1) Estimated committed effective doses received from all pathways pursuant to § 194.51 and § 194.52;
 - (2) Estimated radionuclide concentrations in USDWs pursuant to § 194.53; and
 - (3) Estimated dose equivalent received from USDWs pursuant to § 194.52 and § 194.53.
- (d) The number of estimates generated pursuant to paragraph (c) of this section shall be large enough such that the maximum estimates of doses and concentrations generated exceed the 99th percentile of the population of estimates with at least a 0.95 probability.
- (e) Any compliance application shall display:
- (1) The full range of estimated radiation doses; and
 - (2) The full range of estimated radionuclide concentrations.
- (f) Any compliance application shall document that there is at least a 95 percent level of statistical confidence that the mean and the median of the range of estimated radiation doses and the range of estimated radionuclide concentrations meet the requirements of § 191.15 and part 191, subpart C of this chapter, respectively.

55.2 Background

The individual and groundwater protection requirements of 40 CFR 191.15 and 40 CFR Part 191 Subpart C ([U.S. EPA 1993](#)) place limitations on both the potential radiation exposure of individuals and the possible levels of radioactive contamination of groundwater caused by disposal of waste in the Waste Isolation Pilot Plant (WIPP). The criteria for compliance are provided in 40 CFR 194.51 through 194.55 ([U.S. EPA 1996](#)). The individual protection requirement focuses on the annual radiation dose of a maximally exposed person living on the surface just outside the Land Withdrawal Act boundary. In particular, 40 CFR 191.15 requires that the WIPP be constructed in such a manner as to provide a reasonable expectation that, for 10,000 years after disposal, undisturbed performance of the disposal system will not cause the annual committed effective dose equivalent (hereafter called “dose”) to exceed 15 millirems (mrem) (150 microsieverts) to any member of the public in the accessible environment. Part 191 Subpart C also requires that underground sources of drinking water (USDWs) be protected at least to the extent prescribed by the National Primary Drinking Water Regulations at 40 CFR Part 141 ([U.S. EPA 1992](#)) as they existed on January 19, 1994 (per 40 CFR 191.24(a)(1)).

Information and data from previous compliance certification and recertification applications that form the basis of past U.S. Department of Energy (DOE) compliance positions and past U.S. Environmental Protection Agency (EPA) decision documents are found in the 2014 Compliance Recertification Application (CRA-2014; [U.S. DOE 2014](#)).

55.3 Changes or New Information Since the CRA-2014

The DOE has deferred submittal of the CRA-2019 PA until after submission of the CRA-2019 (see Executive Summary 2019, Section 1.3). As such, the CRA-2014 PA continues to be the baseline calculation for the CRA-2019. As directed in 40 CFR 194.15(b), where information remains valid and has been submitted in previous recertification applications, such information may be summarized and referenced. Information and data from previous compliance certification and recertification applications that form the basis of past DOE compliance positions and past EPA decision documents are found in the CRA-2014 ([U.S. DOE 2014](#)). The results of the deferred PA will be described in a second submission that will also include revisions, when appropriate, to the information submitted in March, 2019.

The DOE's methodology for demonstrating compliance with 40 CFR 194.55 has not changed since the Compliance Certification Application (CCA; [U.S. DOE 1996](#)). Updates to the USDW parameters are included in Appendix IGP-2019. Appendix IGP-2014 documents the DOE's continued compliance with all other individual and groundwater protection requirements.

55.4 References

(*Indicates a reference that has not been previously submitted.)

U.S. Department of Energy (DOE). 1996. Title 40 CFR Part 191 Compliance Certification Application for the Waste Isolation Pilot Plant (October). 21 vols. Carlsbad, NM: Carlsbad Area Office. DOE/CAO 1996-2184.

U.S. Department of Energy (DOE). 2014. Title 40 CFR Part 191 Subparts B and C. Compliance Recertification Application for the Waste Isolation Pilot Plant (March). Carlsbad Field Office, Carlsbad, NM. DOE/WIPP 2014-3503.*

U.S. Environmental Protection Agency (EPA). 1992. 40 CFR Part 141: National Primary Drinking Water Regulations: Final Rule. *Federal Register*, vol. 57 (July 17, 1992): 31838-849.

U.S. Environmental Protection Agency (EPA). 1993. 40 CFR Part 191 Environmental Radiation Protection Standards for the Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes: Final Rule. *Federal Register*, vol. 58 (December 20, 1993): 66398-416.

U.S. Environmental Protection Agency (EPA). 1996. 40 CFR Part 194: Criteria for the Certification and Recertification of the Waste Isolation Pilot Plant's Compliance with the 40 CFR Part 191 Disposal Regulations: Final Rule. *Federal Register*, vol. 61 (February 9, 1996): 5223-5245.