
**Title 40 CFR Part 191
Subparts B and C
Compliance Recertification Application 2019
for the
Waste Isolation Pilot Plant
Passive Institutional Controls
(40 CFR § 194.43)**



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

Carlsbad Field Office
Carlsbad, New Mexico

Compliance Recertification Application 2019
Passive Institutional Controls
(40 CFR § 194.43)

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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
NEA	Nuclear Energy Agency
PIC	Passive Institutional Control
RK&M	Records, Knowledge and Memory
WIPP	Waste Isolation Pilot Plant

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43.0 Passive Institutional Controls (40 CFR 194.43)

43.1 Requirements

§ 194.43 Passive Institutional Controls

- (a) Any compliance application shall include detailed descriptions of the measures that will be employed to preserve knowledge about the location, design, and contents of the disposal system. Such measures shall include:
- (1) Identification of the controlled area by markers that have been designed and will be fabricated and emplaced to be as permanent as practicable;
 - (2) Placement of records in the archives and land record systems of local, State, and Federal governments, and international archives, that would likely be consulted by individuals in search of unexploited resources. Such records shall identify:
 - (i) The location of the controlled area and the disposal system;
 - (ii) The design of the disposal system;
 - (iii) The nature and hazard of the waste;
 - (iv) Geologic, geochemical, hydrologic, and other site data pertinent to the containment of waste in the disposal system, or the location of such information; and
 - (v) The results of tests, experiments, and other analyses relating to backfill of excavated areas, shaft sealing, waste interaction with the disposal system, and other tests, experiments, or analyses pertinent to the containment of waste in the disposal system, or the location of such information.
 - (3) Other passive institutional controls practicable to indicate the dangers of the waste and its location.
- (b) Any compliance application shall include the period of time passive institutional controls are expected to endure and be understood.
- (c) The Administrator may allow the Department to assume passive institutional control credit, in the form of reduced likelihood of human intrusion, if the Department demonstrates in the compliance application that such credit is justified because the passive institutional controls are expected to endure and be understood by potential intruders for the time period approved by the Administrator. Such credit, or a smaller credit as determined by the Administrator, cannot be used for more than several hundred years and may decrease over time. In no case, however, shall passive institutional controls be assumed to eliminate the likelihood of human intrusion entirely.

43.2 Background

Regulations in 40 CFR Part 191 Subparts B and C ([U.S. EPA 1993](#)) state that disposal systems shall be designed and built such that they provide a reasonable expectation that for 10,000 years (1) the undisturbed performance of the system will not result in an annual committed effective dose to any member of the public in excess of 15 millirem, (2) the levels of radioactive contamination in groundwater will not exceed limits specified by the standard in 40 CFR 191.24, and (3) the probability of releases from all significant processes and events acting on the disposal system will not exceed the specifications in 40 CFR 191.13(a).

40 CFR Part 191 Appendix C states “the Federal Government is committed to retaining ownership of all disposal sites for spent nuclear fuel and high-level and transuranic radioactive wastes and will establish appropriate markers and records, consistent with 40 CFR 191.14(c). The Agency assumes that, as long as such passive institutional controls endure and are understood, they: (1) Can be effective in deterring systematic or persistent exploitation of these disposal sites; and (2) can reduce the likelihood of inadvertent, intermittent human intrusion to a degree to be determined by the implementing agency. However, the Agency believes that passive institutional controls can never be assumed to eliminate the chance of inadvertent and intermittent human intrusion into these disposal sites.” Subsequent to Part 191 requirements, 40 CFR 194.32 ([U.S. EPA 1996](#)) also requires that performance assessments include the effects of drilling. A goal of Passive Institutional Controls (PICs) is to minimize the likelihood of inadvertent human activities that affect repository performance ([U.S. DOE 1996](#), Compliance Certification Application [CCA], Appendix PIC).

After closure, the Waste Isolation Pilot Plant (WIPP) will employ markers that will be placed at the site to inform future generations about the disposal system's design and contents, including the presence and hazards of radioactive waste. The markers will be constructed in a manner that will make them as permanent as practicable and will be able to withstand both natural and human-initiated forces that could reasonably be expected to occur at the site.

December 2009, the EPA requested that U.S. Department of Energy (DOE) representatives from the WIPP become more involved with international efforts for nuclear waste disposal. As a result of the EPA's request, the DOE initiated involvement with the international efforts through the Nuclear Energy Agency (NEA) to establish international guidelines for Long-Term Preservation of Information and Memory ([Moody 2010](#)). On July 28, 2010, DOE requested an extension for the Passive Institutional Controls Program schedule as a result of. To date, the EPA has not officially responded to this request.

A result of the on-going international efforts, DOE has been involved with the first two phases of the NEA's Records, Knowledge and Memory (RK&M) group. These first two phases will be completed and a final disposition posted in April of 2018. The start of phase three of the RK&M group (involving marker systems) is expected to begin in late 2018.

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](#)).

43.3 Changes or New Information Since the CRA-2014

For the CRA-2019, DOE is not proposing any changes to the PICs program for the WIPP. Information pertaining to the program as provided in the CCA ([U.S. DOE 1996](#)), CRA-2004 ([U.S. DOE 2004](#)), CRA-2009 ([U.S. DOE 2009](#)) and CRA-2014 ([U.S. DOE 2014](#)) remains unchanged. DOE believes it has demonstrated continued compliance with the provisions of 40 CFR 194.43.

43.3 References

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

Moody, D.C. 2010. Letter to Mr. Mike Flynn (Subject: Request for Extension in the Passive Institutional Controls Program Schedule). 28 July 2010. U.S. Department of Energy, Carlsbad Field Office, Carlsbad, NM.

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 Area Office, Carlsbad, NM. DOE/CAO 1996-2184.

U.S. Department of Energy (DOE). 2004. Title 40 CFR Part 191 Compliance Recertification Application for the Waste Isolation Pilot Plant (March). 10 vols. Carlsbad Field Office, Carlsbad, NM. DOE/WIPP 2004-3231.

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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). 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.

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