
**Title 40 CFR Part 191
Subparts B and C
Compliance Recertification Application 2014
for the
Waste Isolation Pilot Plant
Active Institutional Controls
(40 CFR § 194.41)**



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

**Carlsbad Field Office
Carlsbad, New Mexico**

Compliance Recertification Application 2014
Active Institutional Controls
(40 CFR § 194.41)

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Acronyms and Abbreviations

AIC	active institutional control
CARD	Compliance Application Review Document
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
LMP	Land Management Plan
PA	performance assessment
WIPP	Waste Isolation Pilot Plant

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1 **41.0 Active Institutional Controls (40 CFR § 194.41)**

2 **41.1 Requirements**

§ 194.41 Active Institutional Controls

(a) Any compliance application shall include detailed descriptions of proposed active institutional controls, the controls' location, and the period of time the controls are proposed to remain active. Assumptions pertaining to active institutional controls and their effectiveness in terms of preventing or reducing radionuclide releases shall be supported by such descriptions.

(b) Performance assessments shall not consider any contributions from active institutional controls for more than 100 years after disposal.

3

4 **41.2 Background**

5 Assurance requirements are included in the disposal regulations to compensate in a qualitative
6 manner for the inherent uncertainties in projecting the behavior of natural and engineered
7 components of the Waste Isolation Pilot Plant (WIPP) for many thousands of years (U.S. EPA
8 1985, p. 38072, and Compliance Application Review Document [CARD] 41, U.S. EPA 1998a,
9 Section 41.A.1). Section 194.41 is one of the compliance criteria. Active institutional controls
10 (AICs) are defined in 40 CFR § 191.12 (U.S. EPA 1993) as "controlling access to a disposal site
11 by any means other than passive institutional controls, performing maintenance operations or
12 remedial actions at a site, controlling or cleaning up releases from a site, or monitoring
13 parameters related to disposal system performance." Section 194.41 requires AICs to be
14 maintained for as long a period of time as practicable after disposal; however, contributions from
15 AICs for reducing the rate of human intrusion in the performance assessment (PA) may not be
16 considered for more than 100 years after disposal.

17 **41.3 1998 Certification Decision**

18 To meet the requirements for section 194.41, the U.S. Environmental Protection Agency (EPA)
19 expected the Compliance Certification Application (CCA) (U.S. DOE 1996) to describe in detail
20 the proposed AICs and their location and function and to identify the period of time they are
21 expected to remain active. The EPA also expected the U.S. Department of Energy (DOE) to
22 provide detailed information regarding implementation of the controls, any assumptions
23 pertaining to the effectiveness of active controls, a justification for any credit for the AICs used
24 in the PA, and the method for determining the credit. The EPA specified that the PA could not
25 assume that the AICs would be effective for a period longer than 100 years after disposal.

26 In the CCA, Chapter 7.0 and Appendix AIC, the DOE described its plan for the AICs, including
27 constructing a fence and roadway around the surface footprint of the repository, posting warning
28 signs, and performing routine patrols and surveillance. The DOE stated that the AICs will be
29 maintained for 100 years after closure of the WIPP facility and would effectively prevent human
30 intrusion during that time.

31 The EPA reviewed the DOE's proposed plans for the AICs in connection with the types of
32 activities (U.S. EPA 1998a, Section 41.A.3) that may be expected to occur in the vicinity of the
DOE/WIPP-14-3503

1 WIPP site during the first 100 years after disposal (i.e., ranching, farming, hunting, scientific
2 activities, utilities and transportation, groundwater pumping, surface excavation, potash
3 exploration, construction, and hostile or illegal activities). The EPA also examined the
4 assumptions made by the DOE to justify the assertion that the AICs will be completely effective
5 for 100 years.

6 The EPA found that the DOE adequately described the proposed AICs and the bases for their
7 assumed effectiveness and did not assume in the PA that the AICs would be effective for more
8 than 100 years, and thus found the DOE to be in compliance with section 194.41.

9 A complete description of the EPA's 1998 Certification Decision for section 194.41 can be
10 found in U.S. EPA (U.S. EPA 1998b).

11 **41.4 Changes in the CRA-2004**

12 The 2004 Compliance Recertification Application (CRA-2004) (U.S. DOE 2004), Chapter 7.0
13 contains the changes related to AICs since 1998. The DOE reported that the CCA, Appendix
14 AIC was unchanged since 1998; however, the following changes were included in CRA-2004:

- 15 • A new timeline for implementation of AICs
- 16 • DOE's approach to maintaining and replacing AICs
- 17 • Minimum standards to apply during construction and maintenance of AICs

18 **41.5 EPA's Evaluation of Compliance for the 2004 Recertification**

19 Based on the EPA's review of the activities and conditions in and around the WIPP site, the EPA
20 did not identify any significant changes in the planning and execution of the DOE's AICs plan
21 since the 1998 Certification Decision (U.S. EPA 2006a, p. 41-2, paragraph 2 and paragraph 4).

22 The EPA concluded that the CRA-2004 adequately described, in detail, the proposed AICs and
23 their location and function, and identified the basis for the DOE's assumed effectiveness. The
24 EPA confirmed that the DOE's CRA-2004 Performance Assessment Baseline Calculations
25 (Leigh et al. 2005) used the maximum allowable credit for the AICs against human intrusion
26 (100 years). The EPA found reasonable the DOE's assertion that the AICs will completely
27 prevent human intrusion for 100 years.

28 The EPA approved the removal of Appendix LMP (Land Management Plan) from recertification
29 applications. The EPA found that information from Appendix LMP was not used as a basis for
30 the EPA's 1998 Compliance Decision on section 194.41 (U.S. EPA 1998b). Because it does not
31 directly support compliance demonstrations for the EPA's disposal regulations, its removal from
32 the CRA-2004 was not significant, nor did it affect the EPA's evaluation of continued
33 compliance.

1 During its review of the CRA-2004, the EPA received no public comments on the DOE's
2 continued compliance with the AICs requirements of section 194.41. The EPA found (U.S. EPA
3 2006b) the DOE to be in continued compliance with the requirements of section 194.41.

4 **41.6 Changes or New Information Between the CRA-2004 and the CRA-2009** 5 **(Previously: Changes or New Information Since the 2004 Recertification)**

6 In the CRA-2009 (U.S. DOE 2009), the DOE did not propose any changes to the AICs program
7 for the WIPP. Information pertaining to the program as provided in the CCA and the CRA-2004
8 remained unchanged. The DOE believed it had demonstrated continued compliance with the
9 provisions of section 194.41.

10 **41.7 EPA's Evaluation of Compliance for the 2009 Recertification**

11 Based on a review and evaluation of the CRA-2009, CRA-2004, CCA Appendix AIC (U.S. DOE
12 1998a), and supplemental information provided by the DOE (Federal Document Management
13 System Docket ID No. EPA-HQ-OAR-2009-0330, Air Docket A-98-49), the EPA determined
14 that the DOE continued to comply with the requirements of section 194.41 (U.S. EPA 2010).

15 **41.8 Changes or New Information Since the CRA-2009**

16 In the CRA-2014, the DOE is not proposing any changes to the AICs program for the WIPP.
17 Information pertaining to the program as provided in the CCA, CRA-2004 and CRA-2009
18 remains unchanged. The DOE believes it has demonstrated continued compliance with the
19 provisions of section 194.41.

20 **41.9 References**

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

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