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**Title 40 CFR Part 191  
Subparts B and C  
Compliance Recertification Application 2019  
for the  
Waste Isolation Pilot Plant  
Consideration of Protected  
Individual and Exposure Pathways  
(40 CFR 194.51 and 194.52)**



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

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**Compliance Recertification Application 2019**  
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**Individual and Exposure Pathways**  
**(40 CFR 194.51 and 194.52)**

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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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## **51/52. Consideration of Protected Individual and Exposure Pathways (40 CFR 194.51 and 194.52)**

### **51/52.1 Requirements**

§194.51 Consideration of Protected Individual Compliance assessments that analyze compliance with §191.15 of this chapter shall assume that an individual resides at the single geographic point on the surface of the accessible environment where that individual would be expected to receive the highest dose from radionuclide releases from the disposal system.

§194.52 Consideration of Exposure Pathways

In compliance assessments that analyze compliance with §191.15 of this chapter, all potential exposure pathways from the disposal system to individuals shall be considered. Compliance assessments with part 191, subpart C and §191.15 of this chapter shall assume that individuals consume 2 liters per day of drinking water from any underground source of drinking water in the accessible environment.

### **51/52.2 Background**

Title 40 CFR 194.51 and 194.52 ([U.S. EPA 1996](#)) of the Waste Isolation Pilot Plant (WIPP) certification criteria apply to the individual protection requirements of 40 CFR 191.15 and the groundwater protection standards of 40 CFR Part 191 Subpart C ([U.S. EPA 1993](#)). Title 40 CFR 194.51 requires the U.S. Department of Energy (DOE) to assume, in its compliance assessments, that an individual resides at the point where the dose from radionuclide releases from the WIPP would be greatest. 40 CFR 194.52 requires the DOE to consider, in its compliance assessments, all the potential exposure pathways for radioactive contaminants from the WIPP. Compliance with 40 CFR 194.51 and 194.52 is addressed in this single section because the criteria are closely related.

Assessment of the likelihood that the WIPP will meet the individual dose limits and radionuclide concentration limits for groundwater is conducted through a process known as compliance assessment. Compliance assessment uses methods similar to those of the performance assessment (PA) for the containment requirements, but is required to address only undisturbed performance of the disposal system. That is, compliance assessment does not include human intrusion scenarios (i.e., drilling or mining for resources). Compliance assessment can be considered a “subset” of PA.

The individual protection requirements of Part 191 limit annual committed effective doses of radiation to members of the public to no more than 15 millirem (mrem) (150 microsieverts). This requirement is concerned with human exposure to radionuclides from disposal systems for 10,000 years. These criteria address the definition of a protected individual, the consideration of exposure pathways, the consideration of underground sources of drinking water (USDWs), the scope of compliance assessments, and the basis for determining compliance with the Individual Protection Standards ([U.S. EPA 1996](#)).

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.

### **51/52.3 Changes or New Information Since the CRA-2014**

In support of the CRA-2019, the DOE reviewed and updated information provided in the Compliance Certification Application (CCA; [U.S. DOE 1996](#)) and previous CRA's sections relating to Individual and Groundwater Protection Requirements. The updated material is provided in Appendix IGP-2019. Changes or new information pertaining to the update are listed below:

1. New census and water usage data was assessed to insure the assumption in the USDW determination continued to be appropriate. The new data did not change this determination.
2. New PA results since the CRA-2014 are not available therefore, the CRA-2014 PA continues to be the compliance baseline calculation. The results for compliance assessments for 40 CFR 194.51 and 40 CFR 194.52 have not changed from the assessments made in CRA-2014, section 51/52. Additional information demonstrating compliance with this section's requirements will be included in the deferred PA documentation.

The DOE believes the information provided in this section demonstrates continued compliance with the requirements of 40 CFR 194.51 and 194.52 (see Appendix IGP-2014, Section IGP-4.0 and Appendix IGP-2019, Section IGP-3.0).

### **51/52.4 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). 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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