VI. UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS

Measures to mitigate potential environmental impacts include administrative controls as well as engineered systems. These measures will alleviate some of the adverse environmental effects caused by construction and operation of any facilities that may be built after research and development programs and design programs are complete. However, there are certain probable adverse effects on the environment that cannot be avoided regardless of which alternative is chosen (including continued present action). These unavoidable effects are discussed below. In evaluating possible adverse effects, it should be noted that construction and normal operations will be in compliance with applicable federal, state, and local laws and regulations.

A. RADIATION EXPOSURES

Unavoidable radiation exposures are assumed to be 1) occupational exposures based on SRP experience for removal of waste from tanks and processing and on federal standards for transportation, and 2) exposures to the general population on the same bases. Unavoidable exposures for all the geologic storage modes are assumed to be from very long-term transport of ^{129}I to a water supply after the waste is emplaced (130 man-rem). The occupational and public exposures are given in Table VI-1 and are discussed more fully in Section V. All the offsite exposures are very small compared to those from natural radiation, as discussed in Section XII.

B. NON-NUCLEAR EVENTS

Unavoidable non-nuclear events include occupational lost-workday injuries and fatalities during construction and operation of new facilities. These are summarized in Table VI-2 and are discussed in more detail in Section V. On a statistical basis, these events can be expected to occur; however, the trend of industrial accident rates has been downward, which indicates that safety programs will have the effect of causing some avoidance of expected casualties.

C. OTHER

Other unavoidable adverse environmental effects are the effects of construction, land-use requirements, water and power requirements, and chemical discharges. These are not expected to be large in terms of available resources or environmental impact, as shown in Sections V and VII.

TABLE VI-1

Unavoidable Radiation Exposures

Case	*Alternative Plan*	*Occupational Population Exposure, man-rem*[a]	*Offsite Population Exposure, man-rem*[a]
1	Continue Storage in Tanks	356	49
2.1	Process to Glass; Offsite Geologic Disposal[c]	3750[b]	750
2.2	Process to Glass; Surface Storage at SRP[c]	2640	67
2.3	Process to Glass; Disposal in SRP Bedrock Cavern	2350	200
3	Slurry Liquid Waste into SRP Bedrock Cavern	42	180

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a. These are integrated over the time required for processing, transportation, and 300 years of storage, as discussed in Section V.

b. Includes occupational exposures during transportation to offsite repository.

c. Evaluated specifically for glass but expected to be similar for most high integrity waste forms.

TABLE VI-2

Expected Lost-Workday Injuries and Fatalities

Case	*Alternative Plan*	*Construction*[a] *Lost Workday Injuries*	*Fatalities*	*Operations*[b] *Lost Workday Injuries*	*Fatalities*
1	Continue Storage in Tanks[c]	1600	17	1.03	0.13
2.1	Process to Glass; Store in Offsite to Geologic Disposal[d]	530	5.9	16	0.63
2.2	Process to Glass; Surface Storage at SRP	590	6.4	1.3	0.17
2.3	Process to Glass; Disposal in SRP Bedrock Cavern[d]	550	6.1	0.87	0.11
3	Slurry Liquid Waste into SRP Bedrock Cavern	180	2.2	0.16	0.021

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a. From U.S. average construction, industry, and mining experience.

b. Based on SRP operating experience.

c. Over a 300-year period.

d. Evaluated specifically for glass but expected to be the same for most high integrity waste forms.