

Environmental Consequences

to occur for the Planning Basis Option followed by the Full Separations Option due to the larger number of total worker hours associated with these options.

Table 5.2-27 presents the occurrences of lost work days and total recordable cases for interim storage activities after the year 2035. Impacts are highest for the Direct Cement Option due to the larger number of employees during interim storage operations. ***The Transuranic Separations and Steam Reforming Options are not listed in this table because there would be no interim storage of final waste forms produced under these options.***

5.2.11 ENVIRONMENTAL JUSTICE

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, directs each Federal agency to "make...achieving environmental justice part of its mission" and to identify and address "...disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations." The Presidential Memorandum that accompanied Executive Order 12898 emphasized the importance of using existing laws, including the National Environmental Policy Act, to identify and address environmental justice concerns, "including human health, economic, and social effects, of Federal actions."

The Council on Environmental Quality, which oversees the Federal government's compliance with Executive Order 12898 and the National Environmental Policy Act, subsequently developed guidelines to assist Federal agencies in incorporating the goals of Executive Order 12898 in the NEPA process. This guidance, published in 1997, was intended to "...assist Federal agencies with their NEPA procedures so that environmental justice concerns are effectively identified and addressed."

As part of this process, DOE identified (in Section 4.12) minority and low-income populations within a 50-mile radius of INTEC, which was defined as the region of influence for the environmental justice analysis. The section that

follows discusses whether implementing the proposed waste processing alternatives described in Chapter 3 would result in disproportionately high or adverse impacts to minority and low-income populations. Section C.8.4.19 discusses the environmental justice analysis at the Hanford Site under the Minimum INEEL Processing Alternative.

5.2.11.1 Methodology

The Council on Environmental Quality guidance (CEQ 1997) does not provide a standard approach or formula for identifying and addressing environmental justice issues. Instead, it offers Federal agencies general principles for conducting an environmental justice analysis under NEPA:

- Federal agencies should consider the population structure in the region of influence to determine whether minority populations, low-income populations, or Indian tribes are present, and if so, whether there may be disproportionately high and adverse human health or environmental effects on any of these groups.
- Federal agencies should consider relevant public health and industry data concerning the potential for multiple or cumulative exposure to human health or environmental hazards in the affected population and historical patterns of exposure to environmental hazards, to the extent such information is available.
- Federal agencies should recognize the interrelated cultural, social, occupational, historical, or economic factors that may amplify the effects of the proposed agency action. These would include the physical sensitivity of the community or population to particular impacts.
- Federal agencies should develop effective public participation strategies that seek to overcome linguistic, cultural, institutional, and geographic barriers to

Table 5.2-27. Estimated annual worker injury impacts to involved workers from interim storage operations post-2035.

Alternative	Workers per year	Lost workdays per year	Total recordable cases per year
Full Separations Option	6.5	1.8	0.24
Planning Basis Option	6.5	1.8	0.24
Hot Isostatic Pressed Waste Option	13	3.7	0.48
Direct Cement Waste Option	18	5.0	0.65
Early Vitrification Option	6.5	1.8	0.24
Minimum INEEL Processing Alternative	6.5	1.8	0.24
<i>Vitrification without Calcine Separations Option^a</i>	6.5	1.8	0.24
<i>Vitrification with Calcine Separations Option^a</i>	6.5	1.8	0.24

a. Impacts were estimated assuming that the vitrified SBW would be managed as HLW and placed in interim storage pending disposal in a geologic repository. If DOE determines through the waste incidental to reprocessing process that the SBW can be managed as mixed transuranic waste, interim storage of vitrified SBW would not be required and the impacts would be reduced from those reported above.

meaningful participation, and should incorporate active outreach to affected groups.

- Federal agencies should assure meaningful community representation in the process, recognizing that diverse constituencies may be present.
- Federal agencies should seek tribal representation in the process in a manner that is consistent with the government-to-government relationship between the United States and tribal governments, the Federal government's trust responsibility to Federally-recognized tribes, and any treaty rights.

The environmental justice analysis was based on the assessment of potential impacts associated with the various waste processing alternatives to determine if there were high and adverse human health or environmental impacts. In this assessment, DOE reviewed potential impacts arising under the major disciplines and resource areas including socioeconomic, cultural resources, air resources, water resources, ecological resources, health and safety, and waste and materials during both the construction and operations work phases. Regarding health effects, both normal facility operations and postulated accident conditions were analyzed, with accident scenarios

evaluated in terms of risk to the public. Likewise, the analysis of transportation impacts included both normal and potential accident conditions for the transportation of materials.

Although no high and adverse impacts were predicted for the activities analyzed in this EIS, DOE nevertheless considered whether there were any means for minority or low-income populations to be disproportionately affected. The basis for making this determination would be a comparison of areas predicted to experience human health or environmental impacts with areas in the region of influence known to contain high percentages of minority or low-income populations as reported by the U.S. Bureau of the Census.

Environmental justice guidance developed by the Council on Environmental Quality defines members of a "minority" as individuals who are members of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic (CEQ 1997). The Council defines these groups as minority populations when either the minority population of the affected area exceeds 50 percent or the percentage of minority population in the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographical analysis.

Environmental Consequences

Low-income populations are identified using statistical poverty thresholds from the Bureau of Census Current Population Reports, Series P-60 on Income and Poverty. In identifying low-income populations, a community may be considered either as a group of individuals living in geographic proximity to one another, or a set of individuals (such as migrant workers or Native Americans), where either type of group experiences common conditions of environmental exposure or effect.

Any disproportionately high and adverse human health or environmental effects on minority or low-income populations that could result from the waste processing alternatives are assessed for a 50-mile area surrounding INTEC, as discussed in Section 4.12.

5.2.11.2 Construction Impacts

For environmental justice concerns to be implicated, high and adverse human health or environmental impacts must disproportionately affect minority populations or low-income populations. As shown in Section 5.2.2, Socioeconomics, construction under all the waste processing alternatives would generate temporary increases in employment and earnings in the region of interest.

None of the alternatives is expected to significantly affect land use (see Section 5.2.1), cultural resources (see Section 5.2.3), or ecological resources (see Section 5.2.8) because no previously-undisturbed onsite land would be required and no offsite lands are affected. Sections 5.2.6, Air Resources, and 5.2.10, Health and Safety, discuss potential impacts of construction on human health (both workers and the offsite population) and the environment.

Because construction impacts would not significantly impact the surrounding population, and no means were identified for minority or low-income populations to be disproportionately affected, no disproportionately high and adverse impacts would be expected for minority or low-income populations.

5.2.11.3 Operational Impacts

For environmental justice concerns to be implicated, high and adverse human health or environmental impacts must disproportionately affect minority populations or low-income populations. As shown in Section 5.2.2, Socioeconomics, waste processing operations under all alternatives would either maintain (No Action) or increase employment and earnings in the region of influence. None of the alternatives would result in significantly adverse land use or cultural resources impacts.

Sections 5.2.6, Air Resources, 5.2.8, Ecological Resources, and 5.2.10, Health and Safety, discuss potential impacts of operational releases on human health (both workers and the offsite population) and the environment. As shown in these environmental consequences sections, none of the alternatives would result in significantly adverse impacts.

Impacts from high-consequence, low-probability accident scenarios (Section 5.2.14) would be significant should they occur; however, the impacts to specific population locations would be subject to meteorological conditions at the time of the accident. Whether or not such impacts would have disproportionately high and adverse effects with respect to any particular segment of the population would be subject to natural forces, including random meteorological factors. However, the probability of one of these accidents occurring is extremely low (see Section 5.2.14).

Because the impacts from routine facility operations (see Sections 5.2.6 and 5.2.7) and reasonably-foreseeable accidents (see Section 5.2.14) would be low for the surrounding population and no means were identified for minority or low-income populations to be disproportionately affected, no disproportionately high and adverse impacts would be expected for minority or low-income populations.

Unlike fixed-facility accidents, it is impossible to predict where a transportation accident may occur and, accordingly, who might be affected.

In addition to the variability of meteorological conditions, the random nature of accidents with respect to location and timing make it impossible to predict who could be affected by a severe accident. Although adverse impacts could occur in the unlikely event of a high-consequence transportation accident, any potential disproportionate impacts to these populations would be subject to the randomness of these factors. Routine transportation would be carried out over existing roads and highways. The impacts would be expected to be low on the population as a whole. Because the impacts of routine transportation would be expected to be the same on minority or low-income populations as on populations as a whole, no disproportionately high and adverse impacts on minority or low-income populations would be expected from transportation activities.

As noted in Section 5.2.10, public health impacts from waste processing activities are based on projected airborne releases of radioactive and nonradioactive contaminants. Because prevailing winds are out of the southwest and northeast (see Section 4.7.1), contaminants released to the atmosphere from INTEC tend to be carried to the northeast (into the interior of the INEEL) or southwest (into the sparsely-populated area south and west of the INEEL). Minority populations tend to be concentrated south and east of INTEC, in urban areas like Pocatello and Idaho Falls and along the Interstate 15 corridor (see Figure 4-18). The Fort Hall Indian Reservation is also some 40 miles southeast of INTEC (see Figure 4-20). This suggests that minority and low-income populations would not experience higher exposure rates than the general population and that disproportionately high and adverse human health effects would not be expected to occur as a result of HLW processing activities. Releases to surface water would be small *compared to airborne releases*, and would not be expected to result in adverse health impacts.

5.2.11.4 Subsistence Consumption of Fish, Wildlife, and Game

Section 4-4 of Executive Order 12898 directs Federal agencies "whenever practical and appropriate, to collect and analyze information on the consumption patterns of populations who princi-

pally rely on fish and/or wildlife for subsistence and that Federal governments communicate to the public the risks of these consumption patterns." There is no evidence to suggest that minority or low-income populations in the region of influence are dependent on subsistence fishing, hunting, or gathering on the INEEL. DOE nevertheless considered whether there were any means for minority or low-income populations to be disproportionately affected by examining levels of contaminants in crops, livestock, and game animals on the INEEL and from adjacent lands.

Controlled hunting is permitted on INEEL land but is restricted to a very small portion of the northern half of the INEEL. The hunts are intended to assist the Idaho Department of Fish and Game in reducing crop damage on private agricultural lands adjacent to the INEEL. In addition to the limited hunting on the INEEL, several game species and birds live on and migrate through the INEEL. DOE routinely samples game species residing on the INEEL, sheep that have grazed on the INEEL, locally grown foodstuffs and milk around the INEEL for radionuclides (ESRF 1996). Concentrations of radionuclides in the samples have been small and are seldom higher than concentrations observed at control locations distant from the INEEL. The principal source of non-natural radionuclides at these control locations is very small amounts of residual atmospheric fallout from past nuclear weapons tests. Data from programs monitoring these sources of food are reported annually in the *INEEL Site Environmental Report* (ESRF 1996).

Based on DOE monitoring results (ESRF 1996), concentrations of contaminants in crops, livestock, and game animals in areas surrounding the INEEL are low, seldom above background levels. Moreover, the impact analyses conducted for this EIS (see Section 5.2.8) indicate that native plants and wildlife in the region of influence would not be harmed by any of the actions being proposed. Consequently, no disproportionately high and adverse human health impacts would be expected in minority or low-income populations in the region as a result of subsistence consumption of fish, wildlife, native plants, or crops.