5.3 Facility Disposition Impacts

Section 5.3 presents a discussion of potential impacts associated with the disposition of existing HLW ***management*** facilities at INEEL and disposition of new facilities that would be built in support of the proposed waste processing alternatives. The discussion includes (1) the potential impacts of short-term actions in dispositioning new and existing HLW ***management*** facilities, (2) the potential long-term impacts from the disposal of the grouted low-level waste fraction in either a new disposal facility at INTEC or in the Tank Farm and bin sets, and (3) the potential long-term impacts of residual contamination in closed HLW ***management*** facilities. The six facility disposition alternatives are discussed in detail in Section 3.2.

Two kinds of facility disposition are discussed in Section 5.3. The first involves disposition of new facilities required under the ***six*** waste processing alternatives. These new facilities are shown in Table 3-***3*** of Section 3.2. Impacts from disposition of these new facilities are discussed by waste processing alternative rather than by facility disposition alternative. This presentation approach stems from the fact that (1) certain new facilities are required by certain waste processing alternatives and (2) any new facilities would be designed to facilitate a high degree of decontamination once processing ceases. As a result, the analysis assumes that DOE would select the Clean Closure Alternative for all of these new facilities.

The second kind of facility disposition involves disposition of existing HLW ***management*** facilities. Impacts for disposition of existing facilities are presented by facility or facility group and facility disposition alternative rather than by waste processing alternative. Table 3-***3*** lists existing HLW ***management*** facilities and alternatives DOE is considering for their disposition. DOE chose this method of presentation because disposition of existing facilities is independent of the waste processing alternatives evaluated in this EIS and is expected to occur regardless of which waste processing alternative is implemented.

Facility disposition encompasses a number of activities that would be carried out after HLW ***management*** facilities are no longer operational. Once waste processing operations are completed, treatment and storage facilities at INTEC would be deactivated. DOE (1997) discusses the changing mission of INTEC and the planned disposition of surplus facilities. It notes that DOE's goal is to place surplus INEEL facilities in a safe, stable shutdown condition and monitor them while awaiting decommissioning. HLW ***management*** facilities will be decontaminated to the extent practicable; then, depending on the facility disposition alternative selected and the facility in question, they would be entombed and left standing, partially removed, completely removed, or returned to (restricted) industrial use.

The EIS considers six facility disposition alternatives:

- No Action
- Clean Closure
- Performance-Based Closure
- Closure to Landfill Standards
- Performance-Based Closure with Class A Grout Disposal
- Performance-Based Closure with Class C Grout Disposal

Section 3.2.1 contains detailed descriptions of the various facility disposition alternatives.

The No Action Alternative for facility disposition is substantially the same as No Action for waste processing. Therefore Section 5.3 does not present environmental consequences for the facility disposition No Action Alternative over the period 2000 to 2035. Under No Action, there would be no decontamination and decommissioning of HLW ***management*** facilities, and no activities that would produce incremental effluents or emissions. Surveillance and maintenance necessary to protect the environment and the safety and health of workers would be performed in the normal course of INTEC operation.

The No Action Alternative could, however, produce impacts in the years beyond 2035 because calcine would remain in the bin sets and mixed transuranic waste (SBW and newly generated liquid waste) would remain in the Tank Farm. To capture these impacts, DOE analyzed the continued storage of calcine and the mixed transuranic waste/SBW. The analysis is presented in Appendix C.9, Facility Closure Modeling. Potential impacts of continued storage of calcine and mixed transuranic waste/SBW beyond the year 2035, an assumption of the No Action Alternative, are reported in Sections 5.3.5.2 (Water Resources), 5.3.6.2 (Ecological Resources), and 5.3.8.2 (Health and Safety).

The Preferred Alternative for the disposition of existing HLW management facilities at INTEC is to use performance-based closure methods. These methods encompass three of the six facility disposition alternatives analyzed in this EIS: Clean Closure, Performance-Based Closure, and Closure to Landfill Standards. Performance-based closure would be implemented in accordance with applicable regulations and DOE Orders. However, any of the disposition alternatives analyzed in this EIS could be implemented under performance-based closure criteria. Table 3-3 identifies the facility disposition alternatives analyzed in this EIS for existing facilities. The potential impacts associated with the disposition of existing HLW management facilities are presented in Section 5.3.

Consistent with the objectives and requirements of DOE Order 430.1A, Life Cycle Management, and DOE Manual 435.1-1, Radioactive Waste Management Manual, all newly constructed facilities necessary to implement the waste processing alternatives would be designed and constructed consistent with measures that facilitate clean closure. Therefore, the Preferred Alternative for disposition of new facilities is Clean Closure. Table 3-1 identifies the major facilities that may be constructed to implement the waste processing alternatives. This section presents the potential impacts of short-term actions to disposition the new HLW management facilities.

5.3.1 LAND USE

Potential impacts to land use from facility disposition activities were evaluated by reviewing closure plans and project data sheets for RCRA-regulated facilities (Tank Farm, bin sets, Liquid Effluent Treatment and Disposal Facility, and Process Equipment Waste Evaporator) and project data sheets for other HLW ***management*** facilities.

Regardless of the facility disposition alternative chosen, DOE would be required to maintain adequate institutional controls (e.g., fences or warning signs) to limit access to areas that pose a significant health or safety risk to workers until at least the year 2095, when DOE, for purposes of the analysis in this EIS, is assumed to relinquish institutional control.

After closure, most areas within INTEC formerly occupied by waste processing facilities could be designated restricted-use industrial areas. This is consistent with DOE's long-term planning strategy, outlined in DOE (1997), which encourages development in established facility areas (such as INTEC) and discourages new construction in previously-undisturbed or undeveloped areas. These areas could, in theory, be used for new industrial facilities or for warehouses or laydown areas. However, INTEC lies outside of INEEL's "preferred development area" (DOE 1997). Areas formerly occupied by waste processing facilities would not, as long as DOE maintains institutional control, be open to the public for recreational uses or added to the acreage leased to local ranchers for grazing.

In summary, these facility disposition alternatives could affect short- and intermediate-term land use within the secure confines of INTEC but would not affect land use outside of INTEC. None of the facility disposition alternatives would require development of new facilities outside of the secure perimeter fence, and no land currently committed to non-industrial uses (such as ecological research or permitted grazing) would be converted to industrial use. Land use outside of the INEEL would not be affected. Facility disposition activities would be consistent with current and planned uses of INTEC

outlined in the *INEEL Comprehensive Facility and Land Use Plan* (DOE 1997). Activities would also be consistent with DOE guidance on facility and land use planning (DOE 1996). During the period of facility disposition, most existing INEEL waste disposal sites will likely be closed. New site(s) to provide capacity for INEEL wastes may be required and could be developed inside or outside the fenced INTEC boundary based on site suitability factors. Future disposal capacity and potential siting issues are outside the scope of this EIS and would be reviewed as part of appropriate environmental and permitting activities when a need for additional capacity is identified.

5.3.2 SOCIOECONOMICS

Activities associated with the ultimate disposition of HLW ***management*** facilities could result in potential impacts to the socioeconomics of the INEEL region. Two categories of disposition are considered. The first involves the disposition of the various proposed new facilities that are required to support the waste processing alternatives. The second category covers the disposition of existing facilities. For each facility or group of facilities, DOE has characterized impacts in terms of total employment (direct and indirect) and income or wages (total regional earnings) that would be generated from the disposition of each facility.

The methods used to estimate employment and income levels are consistent with those used to estimate construction and operational employment and income levels described in Section 5.2.2. However, while employment and income levels for construction and operations are reported for the peak year, the employment and income levels for disposition activities are reported as either totals for the life of the activity, or as maximum annual employment and total income. For the proposed facilities that are grouped by a given alternative, employment and income levels are reported as totals. In the case of existing facilities, estimated annual employment and income levels are reported. During disposition activities, the durations of discrete project elements are relatively short, and activities do not always occur sequentially. Thus, peak year employment and income levels are not as meaningful as they would be for longer-term operations. However, employment associated with disposition is included in Appendix C.1.

Since the publication of the Draft EIS, Census 2000 and related data have been incorporated into the socioeconomic analyses. Population figures, housing characteristics, labor information, and economic multipliers (such as employment and earnings multipliers) have been updated to reflect the most current socioeconomic environment in the region of influence.

5.3.2.1 Proposed New Facilities Associated with Waste Processing Alternatives

DOE has estimated the employment and income levels that would result from the dispositioning of the proposed new facilities needed to support waste processing alternatives. Table 5.3-1 presents these estimates by alternative and by proposed projects (which would be performed in yet-to-be-designed facilities). In general, employment and income levels required for facility disposition would be similar to the levels estimated for construction. Potential impacts would occur over shorter periods of time and would neither occur continuously nor simultaneously. The potential impacts to population and housing, community services, and public finance would be the same as described in Section 5.2.2 for construction.

5.3.2.2 Existing Facilities Associated with High-Level Waste Management

The facilities in this group are those that have been used at the INTEC to generate, treat, and store HLW. Because of the number of facilities involved, DOE has organized them in functional groups for purposes of analysis. DOE has analyzed the potential socioeconomic impacts of decontaminating and decommissioning these facilities. Table 5.3-2 estimates the total employment and regional income for the Tank Farm and bin sets for all five disposition alternatives. Table 5.3-3 summarizes annual employment and income by facility group for the facility disposition alternatives in Table 3-***3***.

Table 5.3-1. Summary of employment and income from disposition of facilities that would be constructed under the waste processing alternatives.[a,b]

Number	Project description	Duration of disposition activity[c] (years)	Employment			Total earnings *(Dollars)*[d]
			Direct[c]	Indirect	Total	
	Continued Current Operations Alternative					
P1A	Calcine SBW including New Waste Calcining Facility Upgrades (MACT) and Storage Tanks	2	***58***	***56***	***110***	***4,400,000***
P1B	Newly Generated Liquid Waste and Tank Farm Heel Waste Management	1	***48***	***46***	***94***	***3,600,000***
Peak Year Employment (2018)			***58***	***56***	***110***	***4,400,000***
	Full Separations Option[e]					
P9A	Full Separations	3	220	***220***	***440***	***17,000,000***
P9B	Vitrification Plant	3	***72***	***70***	***140***	***5,400,000***
P9C	Class A Grout Plant	2.5	120	***120***	***230***	***9,000,000***
P18	Remote Analytical Lab	2	***88***	***85***	***170***	***6,600,000***
P24	Vitrified Product Interim Storage	2.8	***31***	30	***61***	***2,300,000***
P27	Grout Disposal	2	140	***130***	***270***	***10,000,000***
P25A	Packaging and Loading Vitrified HLW at INTEC for Shipment to NGR	1	2	2	4	***150,000***
P35D	Class A Grout Packaging	2	30	***29***	***59***	***2,300,000***
P59A	Calcine Retrieval and Transport	1	160	***160***	***320***	***12,000,000***
P118	Separations Organic Incinerator	1	2	2	4	***150,000***
P133	Waste Treatment Pilot Facility	2	***45***	***44***	***89***	***3,400,000***
Peak Year Employment (2036)			***790***	***760***	***1,600***	***59,000,000***
	Planning Basis Option					
P1A	Calcine SBW including New Waste Calcining Facility Upgrade	2	***42***	***41***	***83***	***3,200,000***
P1B	Liquid Waste Tank Farm	1	***48***	***46***	***94***	***3,600,000***
P59A	Calcine Retrieval and Transport	1	160	***160***	***320***	***12,000,000***
P23A	Full Separations	3	220	***220***	***440***	***17,000,000***
P23B	Vitrification Plant	4	***78***	***76***	***150***	***5,900,000***
P23C	Class A Grout Plant	4	110	***100***	***210***	***8,100,000***
P24	Vitrified Product Interim Storage	2.8	***31***	30	***61***	***2,300,000***
P25A	Packaging and Loading Vitrified HLW at INTEC	1	2	2	4	***150,000***
P18	New Analytical Laboratory	2	***88***	***85***	***170***	***6,600,000***
P118	Separations Organic Incinerator	1	2	2	4	***150,000***
P133	Waste Treatment Pilot Facility	2	***45***	***44***	***89***	***3,400,000***
Peak Year Employment (2036)			***660***	***640***	***1,300***	***50,000,000***

Table 5.3-1. Summary of empbyment and income from disposition of facilities that would be constructed under the waste processing alternatives[a,b] (continued).

Number	Project description	Duration of disposition activity[c] (years)	Employment			Total earnings *(Dollars)*[d]
			Direct[c]	Indirect	Total	
	Transuranic Separations Option[e]					
P18	New Analytical Lab	2	***88***	***85***	***170***	***6,600,000***
P27	Class A/C Grout in New Waste Disposal Facility	2	220	***220***	***440***	***17,000,000***
P39A	Packaging and Loading TRU at INTEC for Shipment to the Waste Isolation Pilot Plant	1.5	7	7	14	***530,000***
P49A	TRU-C Separations	3	150	***140***	***290***	***11,00,000***
P49C	Class C Grout Plant	2	***93***	***90***	***180***	***7,000,000***
P49D	Class C Grout Packaging and Shipping to INEEL Landfill	2	***57***	***55***	***110***	***4,300,000***
P59A	Calcine Retrieval and Transport	1	160	***160***	***320***	***12,000,000***
P118	Separations Organic Incinerator	2	2	2	4	***150,000***
P133	Waste Treatment Pilot Facility		***45***	***44***	***89***	***3,400,000***
Peak Year Employment (2036)			***730***	***710***	***1,400***	***55,000,000***
	Hot Isostatic Pressed Waste Option					
P1A	Calcine SBW including New Waste Calcining Facility Upgrades (MACT) and Storage Tanks	2	***42***	***41***	***83***	***3,200,000***
P1B	Newly Generated Liquid Waste and Tank Farm Heel Waste Management	1	***48***	***46***	***94***	***3,600,000***
P18	Remote Analytical Lab	2	***88***	***85***	***170***	***6,600,000***
P59A	Calcine Retrieval and Transport	1	160	***160***	***320***	***12,000,000***
P71	Mixing and HIPing	5	200	***190***	***390***	***15,000,000***
P72	HIP HLW Interim Storage	3	150	***150***	***300***	***12,000,000***
P73A	Packaging and Loading HIP Waste at INTEC for Shipment to a Geologic Repository	2.5	7	7	14	***530,000***
P133	Waste Treatment Pilot Facility	2	***45***	***44***	***89***	***3,400,000***
Peak Year Employment (2036)			***450***	***440***	***890***	***34,000,000***
	Direct Cement Waste Option					
P1A	Calcine SBW including New Waste Calcining Facility Upgrades (MACT) and Storage Tanks	2	***42***	***41***	***83***	***3,200,000***
P1B	Newly Generated Liquid Waste and Tank Farm Heel Waste Management	1	***48***	***46***	***94***	***3,600,000***
P18	Remote Analytical Lab	2	***88***	***85***	***170***	***6,600,000***

Table 5.3-1. Summary of employment and income from disposition of facilities that would be constructed under the waste processing alternatives[a,b] (continued).

Number	Project description	Duration of disposition activity[c] (years)	Employment			Total earnings *(Dollars)*[d]
			Direct[c]	Indirect	Total	
	Direct Cement Waste Option (continued)					
P59A	Calcine Retrieval and Transport	1	160	***160***	***320***	***12,000,000***
P80	Mixing and FUETAP Grout	3	160	***160***	***320***	***12,000,000***
P81	Unseparated Cementitious HLW Interim Storage	3	290	***280***	***570***	***22,000,000***
P83A	Packaging & Loading of Cement Waste at INTEC for Shipment to a Geologic Repository	3.5	7	7	14	***530,000***
P133	Waste Treatment Pilot Facility	2	***45***	***44***	***89***	***3,400,000***
Peak Year Employment (2036)			***420***	***400***	***820***	***31,000,000***
	Early Vitrification Option					
P18	Remote Analytical Lab	2	***88***	***85***	***170***	***6,600,000***
P59A	Calcine Retrieval and Transport	1	160	***160***	***320***	***12,000,000***
P61	Vitrified HLW Interim Storage	3	250	***240***	***490***	***19,000,000***
P62A	Packaging/Loading Vitrified HLW at INTEC for Shipment to a Geologic Repository	3	10	10	20	***750,000***
P88	Vitrifying SBW and Calcine including MACT Upgrades	5	120	***110***	***230***	***8,800,000***
P90A	Packaging & Loading Vitrified SBW at INTEC for Shipment to the Waste Isolation Pilot Plant	1.5	7	7	14	***530,000***
P133	Waste Treatment Pilot Facility	2	***45***	***44***	***89***	***3,400,000***
Peak Year Employment (2036)			***320***	***310***	***630***	***24,000,000***
	Steam Reforming Option					
P13	***New Storage Tanks***	***2***	***19***	***18***	***37***	***1,400,000***
P59A	***Calcine Retrieval and Transport***	***1***	***160***	***160***	***320***	***12,000,000***
P117A	***Calcine Packaging and Loading to Hanford***	***2***	***52***	***50***	***100***	***3,900,000***
P2001	***NGLW Grout Facility***	***1***	***16***	***15***	***31***	***1,200,000***
P35E	***Grout Packaging and Loading for Offsite Disposal***	***2***	***30***	***29***	***59***	***2,300,000***
P2002A	***Steam Reforming***	***1***	***72***	***70***	***140***	***5,400,000***
Peak Year Employment (2036)			***280***	***270***	***550***	***21,000,000***

Table 5.3-1. Summary of employment and income from disposition of facilities that would be constructed under the waste processing alternatives [a,b] (continued).

Number	Project description	Duration of disposition activity[c] (years)	Employment			Total earnings *(Dollars)*[d]
			Direct[e]	Indirect	Total	
	Minimum INEEL Processing Alternative[f]					
P18	Remote Analytical Lab	2	***88***	***85***	***170***	***6,600,000***
P24	Remote Analytical Lab	2.8	***31***	30	***61***	***2,300,000***
P25A	Packaging and Loading Vitrified HLW at INTEC for Shipment to NGR	1	2	2	4	***150,000***
P27	Vitrified Product Interim Storage	3	140	***130***	***270***	***10,000,000***
P59A	Calcine Retrieval and Transport	1	160	***160***	***320***	***12,000,000***
P111	SBW and Newly Generated Liquid Waste Treatment with CsIX to CH TRU Grout and LLW Grout	1	100	***100***	210	***7,800,000***
P112A	Packaging and Loading CH-TRU for Transport to the Waste Isolation Pilot Plant	4.5	7	7	14	***530,000***
P117A	Packaging and Loading Calcine for Transport to Hanford	2	***52***	***50***	***100***	***3,900,000***
P133	Waste Treatment Pilot Facility	2	***45***	***44***	***89***	***3,400,000***
Peak Year Employment (2026)			***320***	***310***	***640***	***24,000,000***
	Vitrification without Calcine Separations Option					
P13	***New Storage Tanks***	***2***	***19***	***18***	***37***	***1,400,000***
P18	***New Analytical Laboratory***	***2***	***88***	***85***	***170***	***6,600,000***
P59A	***Calcine Retrieval and Transport***	***1***	***160***	***160***	***320***	***12,000,000***
P61	***Vitrified HLW Interim Storage***	***3***	***250***	***240***	***490***	***19,000,000***
P62A	***Packaging and Loading Vitrified HLW at INTEC for Shipment to a Geologic Repository***	***3***	***10***	***10***	***20***	***750,000***
P88	***Vitrification with MACT***	***5***	***120***	***110***	***230***	***8,800,000***
P133	***Waste Treatment Pilot Plant***	***2***	***45***	***44***	***89***	***3,400,000***
Peak Year Employment (2036)			***340***	***330***	***670***	***26,000,000***

Table 5.3-1. Summary of employment and income from disposition of facilities that would be constructed under the waste processing alternatives [a,b] (continued).

Number	Project description	Duration of disposition activity[c] (years)	Employment			Total earnings (Dollars)[d]
			Direct[c]	Indirect	Total	
	Vitrification with Calcine Separations Option					
P9A	***Full Separations***	***3***	***220***	***220***	***440***	***17,000,000***
P9C	***Grout Plant***	***2.5***	***120***	***120***	***230***	***9,000,000***
P13	***New Storage Tanks***	***2***	***19***	***18***	***37***	***1,400,000***
P18	***New Analytical Laboratory***	***2***	***88***	***85***	***170***	***6,600,000***
P24	***Vitrified Product Interim Storage***	***2.8***	***31***	***30***	***61***	***2,300,000***
P25A	***Packaging and Loading Vitrified HLW at INTEC for Shipment to a Geologic Repository***	***<1***	***2***	***2***	***4***	***150,000***
P35E	***Grout Packaging and Loading for Offsite Disposal***	***2***	***30***	***29***	***59***	***2,300,000***
P59A	***Calcine Retrieval and Transport***	***1***	***160***	***160***	***320***	***12,000,000***
P88	***Vitrification with MACT***	***5***	***120***	***110***	***230***	***8,800,000***
P133	***Waste Treatment Pilot Plant***	***2***	***45***	***44***	***89***	***3,400,000***
Peak Year Employment (2036)			***710***	***690***	***1,400***	***54,000,000***

a. The EIS analyzes treatment of post-2005 newly generated liquid waste as mixed transuranic waste/SBW for comparability of impacts between alternatives. The newly generated liquid waste could be treated in the same facility as the mixed transuranic waste/SBW or DOE could construct a separate facility to grout the newly generated liquid waste.

b. HLW storage-related projects were eliminated from the peak year analysis because storage timing and durations are dependent on outside factors such as the completion of the national geologic repository. It would be difficult to form estimates based on these unknowns.

c. Source: Data from Project Data Sheets in Appendix C.6.

d. Source: IDOL (2002) presented in 2000 dollars.

e. Table presents bounding scenario for low-level waste fraction disposal.

f. Table presents the bounding scenario.

CH = Contact-handled; CsIX = cesium ion exchange; FUETAP = formed under elevated temperature and pressure; HIP = hot isostatic press; LLW = low-level waste; MACT = maximum achievable control technology; NGR = National Geologic Repository; TRU = transuranic waste.

Table 5.3-2. Summary of annual employment and income for disposition of the Tank Farm and bin sets by facility disposition alternative.[a]

Facility	Annual employment and income (*2000*$)	Facility disposition alternative: Clean closure	Performance-based closure	Closure to landfill standards	Performance-based closure with Class A grout disposal	Performance-based closure with Class C grout disposal
Tank Farm	Direct employment	***280***	20	***12***	***11***	***49***
	Indirect employment	***270***	***19***	***12***	***11***	***47***
	Total employment	***550***	***39***	***24***	***22***	***96***
	Total income	***21,000,000***	***1,500,000***	***900,000***	***830,000***	***3,700,000***
Bin sets	Direct employment	***58***	***55***	***27***	***11***	***49***
	Indirect employment	***56***	***53***	***26***	***11***	***47***
	Total employment	***110***	110	***53***	***22***	***96***
	Total income	***4,400,000***	***4,100,000***	***2,000,000***	***830,000***	***3,700,000***

a. Source: Data from Project Data Sheets in Appendix C.6.

Table 5.3-3. Summary of annual employment and income for disposition of existing HLW *management* facility groups.[a]

Facility	Annual employment: Direct	Indirect	Total	Annual income (*2000*$)
Tank Farm-related facilities (ancillary facilities)	2	***2***	***4***	***150,000***
Bin set-related facilities (ancillary facilities)	<1	***<1***	<1	0
Process Equipment Waste Evaporator & related facilities	***50***	***48***	***98***	***3,800,000***
Fuel Processing Building and related facilities				
Performance-based closure	40	***39***	***79***	***3,000,000***
Closure to landfill standards	32	***31***	***63***	***2,400,000***
Fluorinel and Storage Facility and related facilities	54	***52***	***110***	***4,100,000***
Transport line group	3	3	6	***230,000***
New Waste Calcining Facility				
Performance-based closure	47	***45***	***92***	***3,500,000***
Closure to landfill standards	44	***43***	***87***	***3,300,000***
Remote Analytical Laboratory	7	7	14	***530,000***

a. Source: Data from Project Data Sheets in Appendix C.6.

As can be seen from the tables for existing facilities, the largest number of jobs would be required for Tank Farm Clean Closure (about ***280*** workers). The other scenarios would require relatively smaller numbers of workers and would in all cases be much fewer than the workers required for disposition ***of*** the proposed new facilities.

For both new and existing facilities, DOE would retrain and reassign workers to conduct disposition activities whenever possible (see Section 5.2.2). In some cases, skill mix and the number of personnel available may dictate a reduction in force. The number of workers affected would depend on the alternative selected and the timing. History has shown that such reductions are generally small. The current operational workforce for this mix of existing facilities is currently about 1,100 (Beck 1998). Following the completion of its operational and disposition missions, reductions in the number of jobs would probably occur unless new missions have been identified.

The potential impacts associated with population and housing, community services, and public finance would be the same as described for construction in Section 5.2.2.

5.3.3 GEOLOGY AND SOILS

Facility disposition activities would be carried out after HLW ***management*** facilities are no longer operational. Section 3.2 provides descriptions of the facility disposition alternatives being considered and explains how the various HLW ***management*** facilities would be closed. HLW ***management*** facilities would be decontaminated to the extent required by the selected alternative, then, depending on the facility disposition alternative selected and the facility in question, they would be entombed and left standing, partially removed, completely removed, or returned to (restricted) industrial use. Impacts to unique geologic features are not anticipated.

The Clean Closure Alternative could require the use of engineered caps for stabilized structures and the replacement of contaminated soil with topsoil for revegetation and backfill. The impacts of expanding existing INEEL gravel/borrow pits were addressed in Section 5.6.2 of the SNF & INEL EIS (DOE 1995). New source development for soil for facility closures was evaluated in a separate National Environmental Policy Act document entitled the *Environmental Assessment and Plan for New Silt/Clay Source Development and Use at the Idaho National Engineering Laboratory* (DOE 1997).

Under Clean Closure, radioactive and hazardous constituents would be removed from the site or treated so that residual contamination is indistinguishable from background levels. This could require removal of all buildings, vaults, tanks, transfer piping, and contaminated soil. This alternative would require the largest quantity of soil for backfilling and would also require topsoil for revegetation.

Under Performance-Based Closure, most aboveground structures would be razed and most belowgrade structures (tanks, vaults, and transfer piping) would be decontaminated, stabilized with grout, and left in place. This alternative would require some topsoil for revegetation but would require minimal amounts of soil for backfilling.

Under the Closure to Landfill Standards Alternative, waste residues within tanks, vaults, and piping would be stabilized with grout in order to minimize the release of contaminants into the environment. This alternative would require the use of an engineered cap to cover stabilized structures.

Under Performance-Based Closure with Class A Grout Disposal, facilities would be closed as described under the Performance-Based Closure Alternative, but following completion of these activities low-level waste Class A type Grout (produced under the Full Separations Option) would be disposed of in the Tank Farm and bin sets. This alternative would require some topsoil for revegetation but would require minimal amounts of soil for backfilling.

Under Performance-Based Closure with Class C Grout Disposal, facilities would be closed as described under the Performance-Based Closure Alternative, but following completion of these activities low-level waste Class C type Grout would be disposed of in the Tank Farm and bin

sets. This alternative would require some topsoil for revegetation, but would require minimal amounts of soil for backfilling.

5.3.4 AIR RESOURCES

Activities associated with the ultimate disposition of HLW ***management*** facilities would result in potential impacts on air resources in the INEEL region. Two categories of disposition are considered. The first involves the dispositioning of the various proposed new facilities that are required to support the waste processing alternatives. The second category embraces all the existing facilities as grouped in Table 3-***3***. For each category, DOE has characterized impacts that would result from the dispositioning of each facility according to candidate cleanup criteria. These impacts are described in terms of total airborne emissions, radiation dose to onsite and offsite receptors, and maximum nonradiological pollutant concentrations at onsite and offsite locations. This section presents summaries of emissions estimates and impact assessments. Additional detail, including emissions of individual facilities (or groups of similar facilities), is provided in Appendix C.2. The methods used to estimate emissions are consistent with those used for operational and construction emissions, and are described Appendix C.2.

5.3.4.1 Proposed New Facilities Associated with Waste Processing Alternatives

DOE has estimated the radionuclide and nonradiological pollutant emissions that would result from the dispositioning of proposed new facilities required to support the waste processing alternatives. These emissions are temporary in nature and would persist for a few (1 to 4) years following the operating lifetime of individual facilities. Table 5.3-4 summarizes the annual and cumulative release estimates by waste processing alternative (see Appendix C.2 for emissions for individual projects). ***Table 5.3-5*** compares criteria pollutant and fugitive dust emissions by alternative. In general, radionuclide emission levels from dispositioning of facilities would be much lower than those that would result from operating the involved facilities. Exceptions would be those facilities that process or store waste in sealed form (such as packaging or interim storage facilities), which would have little or no operational emissions. Figure 5.3-***1*** summarizes the radiation doses that would be associated with these emissions. In all cases, doses would be exceedingly low and very small fractions of natural background levels and applicable standards. ***(The applicable offsite dose limit is 10 millirem per year, as specified in 40 CFR 61.92; the occupational standard that applies to onsite doses is 5,000 millirem per year, as specified in 10 CFR 835.202.)*** Nonradiological impacts are illustrated in Figures 5.3-***2*** (for criteria pollutants) and 5.3-***3*** (for toxic air pollutants). When baseline levels are added to projected nonradiological impacts, criteria pollutant levels would remain well below applicable standards ***(IDAPA 58.01.01.577)*** for all alternatives. Toxic air pollutant levels would also well below reference levels ***(IDAPA 58.01.01.585-586)*** for all alternatives.

Table 5.3-4. Summary of annual and cumulative emissions from disposition of facilities that would be constructed under the waste processing alternatives.

Alternative	Maximum annual emission rate and total project emissions [a]									
	Radionuclides [b]		Criteria pollutants [c]		Toxic air pollutants		Carbon dioxide[d]		Fugitive dust	
	Curies per year	Curies	Tons per year	Tons	Pounds per year	Pounds	Tons per year	Tons	Tons per year	Tons
No Action Alternative	–	–	–	–	–	–	–	–	–	–
Continued Current Operations Alternative	1.2×10^{-7}	2.3×10^{-7}	150	200	170	230	3.3×10^{3}	4.4×10^{3}	35	51
Separations Alternative										
Full Separations Option[e]	3.5×10^{-7}	8.2×10^{-7}	490	1.1×10^{3}	550	1.3×10^{3}	1.1×10^{4}	2.5×10^{4}	480	1.1×10^{3}
Planning Basis Option[e]	4.1×10^{-7}	1.1×10^{-6}	590	1.3×10^{3}	680	1.4×10^{3}	1.3×10^{4}	2.8×10^{4}	190	480
Transuranic Separations Option[f]	2.9×10^{-7}	5.9×10^{-7}	410	840	460	960	9.0×10^{3}	1.8×10^{4}	420	890
Non-Separations Alternative										
Hot Isostatic Pressed Waste Option	2.3×10^{-7}	7.0×10^{-7}	430	900	490	1.0×10^{3}	9.4×10^{3}	2.0×10^{4}	180	650
Direct Cement Waste Option	2.3×10^{-7}	5.8×10^{-7}	480	990	550	1.1×10^{3}	1.1×10^{4}	2.2×10^{4}	230	610
Early Vitrification Option	1.9×10^{-7}	5.4×10^{-7}	390	1.1×10^{3}	440	1.3×10^{3}	8.5×10^{3}	2.4×10^{4}	140	460
Steam Reforming Option	$\boldsymbol{2.5\times10^{-7}}$	$\boldsymbol{4.1\times10^{-7}}$	***160***	***250***	***190***	***290***	$\boldsymbol{3.6\times10^{3}}$	$\boldsymbol{5.5\times10^{3}}$	***83***	***160***
Minimum INEEL Processing Alternative[g]	3.5×10^{-7}	8.1×10^{-7}	450	820	510	940	9.9×10^{3}	1.8×10^{4}	410	860
Direct Vitrification Alternative										
Vitrification without Calcine Separations Option	$\boldsymbol{2.9\times10^{-7}}$	$\boldsymbol{7.3\times10^{-7}}$	***360***	$\boldsymbol{1.1\times10^{3}}$	***410***	$\boldsymbol{1.2\times10^{3}}$	$\boldsymbol{8.0\times10^{3}}$	$\boldsymbol{2.4\times10^{4}}$	***160***	***510***
Vitrification with Calcine Separations Option	$\boldsymbol{4.0\times10^{-7}}$	$\boldsymbol{1.1\times10^{-6}}$	***490***	$\boldsymbol{1.4\times10^{3}}$	***560***	$\boldsymbol{1.6\times10^{3}}$	$\boldsymbol{1.1\times10^{4}}$	$\boldsymbol{3.1\times10^{4}}$	***210***	***650***

a. Maximum annual emissions represent the highest emission rate for any single year; total emissions value is the product of annual emissions for each decontamination and decommissioning project and the duration (in years) of that project. Source: Project Data Sheets (Appendix C.6).

b. Radionuclide emissions would consist primarily of strontium-90/yttrium-90 and cesium-137, with much smaller amounts of transuranic isotopes (plutonium, americium, etc.).

c. See ***Table*** 5.3-***5*** for emissions of individual criteria pollutants.

d. Carbon dioxide is listed because this gas has been implicated in global warming.

e. Assumes disposal of low-level waste Class A type grout either offsite or in new INEEL landfill facility; impacts of disposal in Tank Farm and bin sets are addressed in Table 5.3-***6***.

f. Assumes disposal of low-level waste Class C type grout in new facility; impacts of disposal in Tank Farm and bin sets are addressed in Table 5.3-***6***.

g. Assumes "just-in-time" shipping scenario; nonradiological emissions impacts of the interim storage shipping scenario would be somewhat less.

Table 5.3-5. Comparison of criteria pollutant emission rates (tons/year) for disposition of facilities associated with the waste processing alternatives.

Alternative	Sulfur dioxide	Particulate matter	Carbon monoxide	Nitrogen dioxide	Volatile organic compounds
No Action Alternative	0	0	0	0	0
Continued Current Operations Alternative	10	3.7	66	56	12
Separations Alternative					
Full Separations Option	34	12	220	190	39
Planning Basis Option	42	15	260	230	47
Transuranic Separations Option	29	10	180	160	32
Non-Separations Alternative					
Hot Isostatic Pressed Waste Option	30	11	190	160	34
Direct Cement Waste Option	34	12	210	180	38
Early Vitrification Option	27	10	170	150	31
Steam Reforming Option	12	4.1	73	63	13
Minimum INEEL Processing Alternative	24	8.3	150	130	27
Direct Vitrification Alternative					
Vitrification without Calcine Separations Option	25	9.0	160	140	29
Vitrification with Calcine Separations Option	35	12	220	190	39

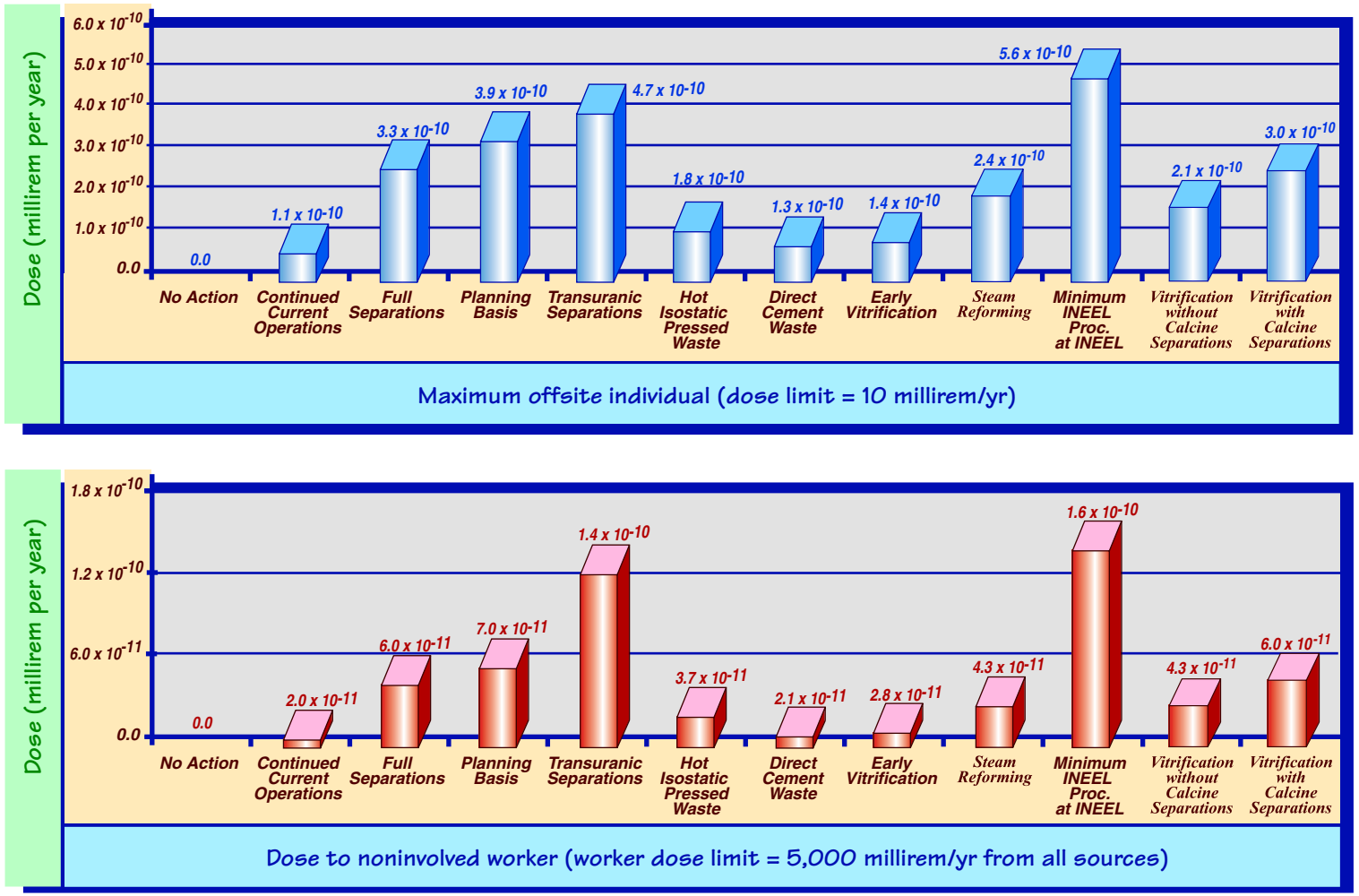


FIGURE 5.3-1. (1 of 2)
Comparison of air pathway doses for disposition of facilities associated with waste processing alternatives.

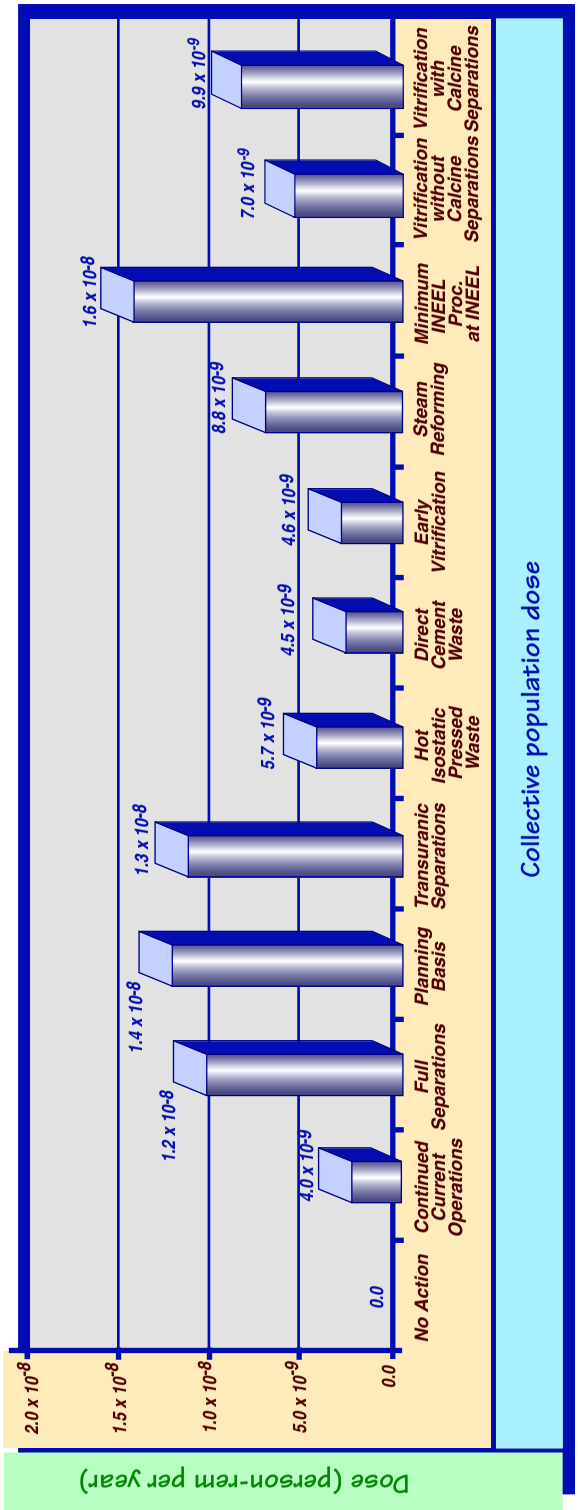
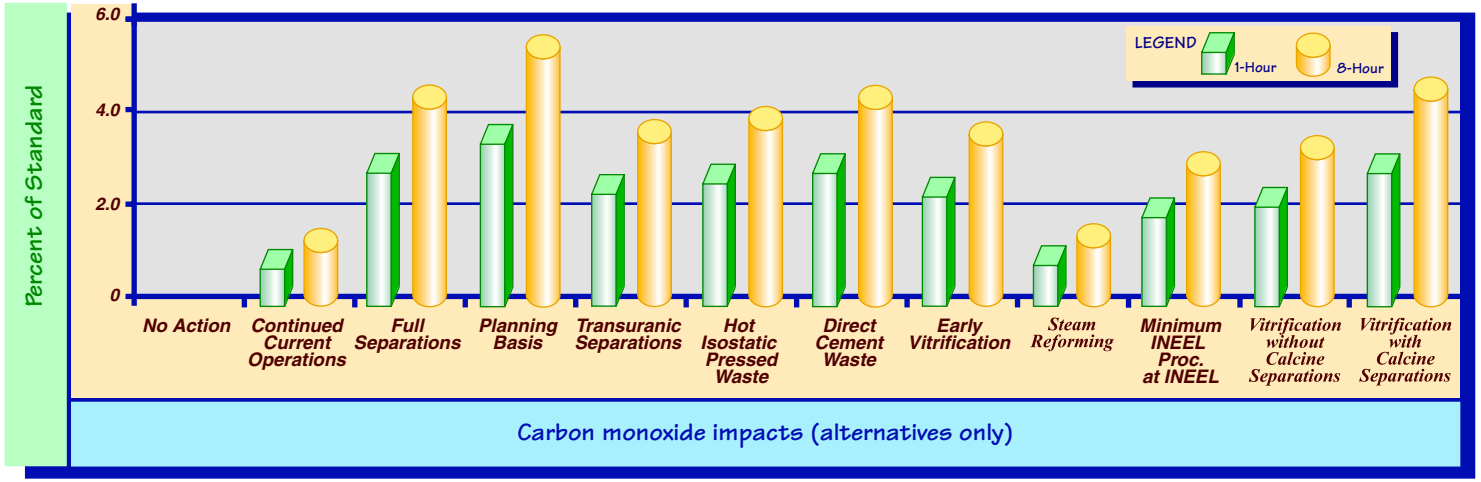


FIGURE 5.3-1. (2 of 2)
Comparison of air pathway doses for disposition of facilities associated with waste processing alternatives.



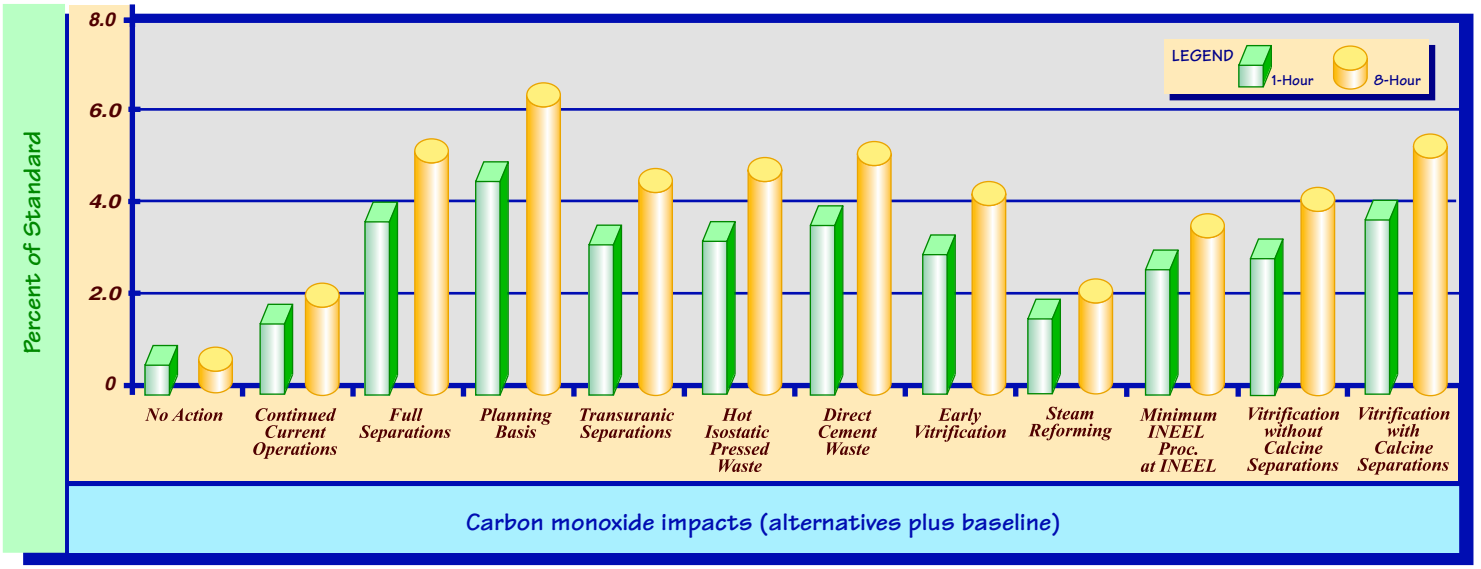
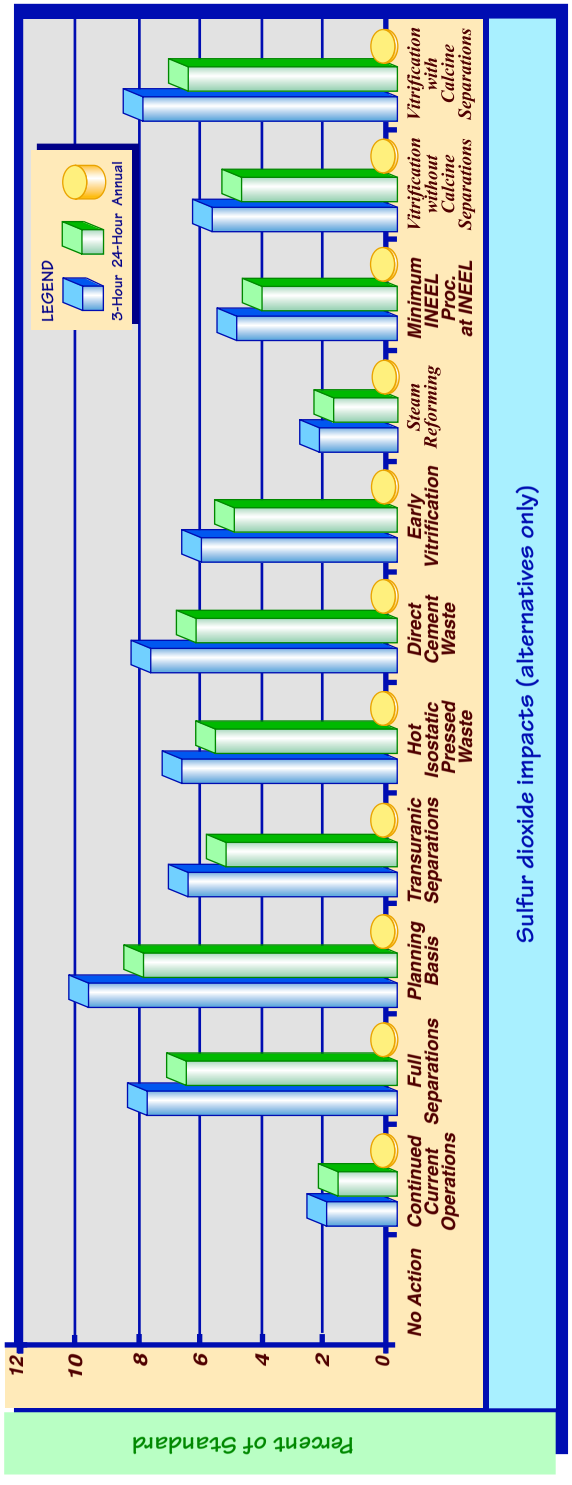


FIGURE 5.3-2. (1 of 4)
Comparison of criteria air pollutant impacts for disposition of facilities associated with waste processing alternatives.



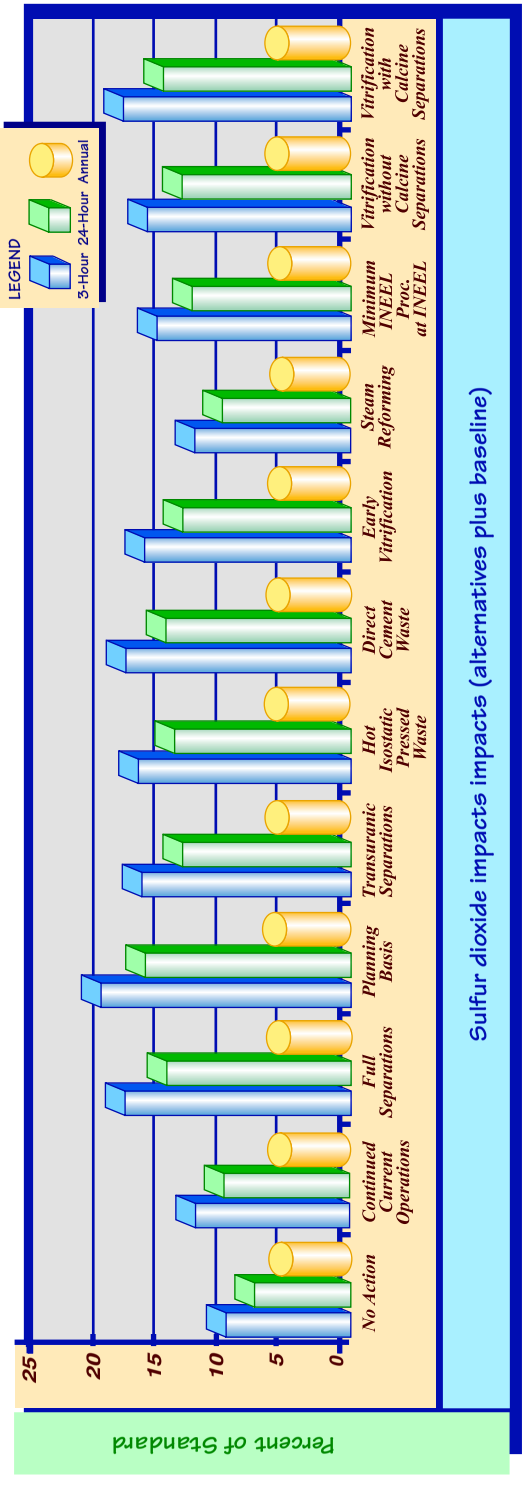
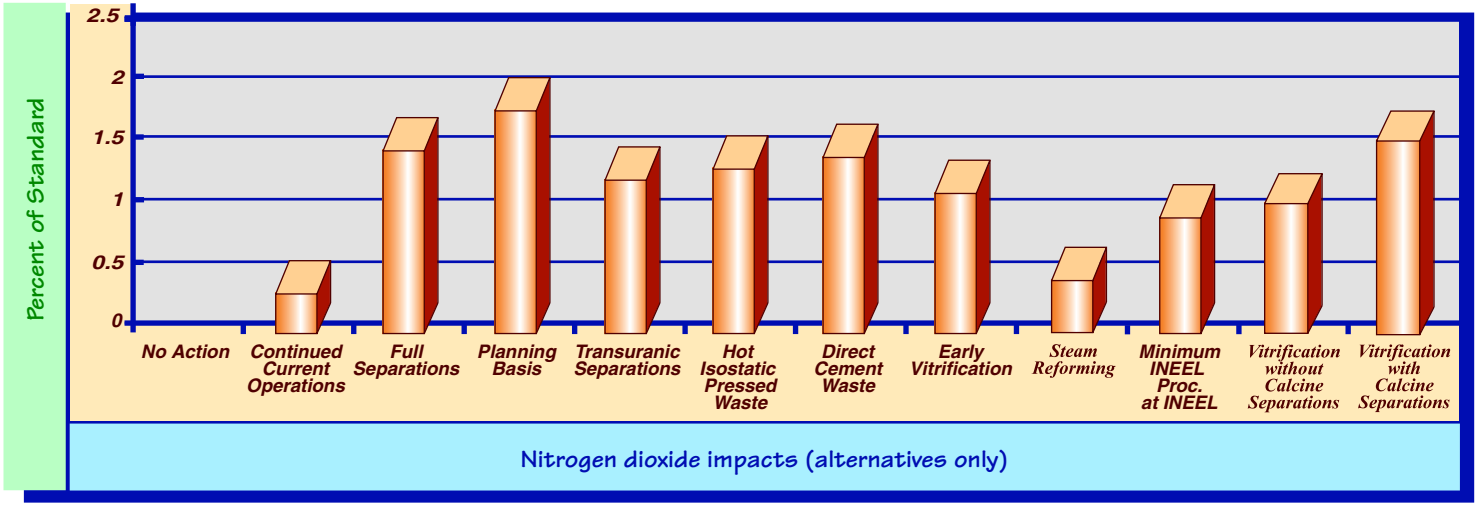


FIGURE 5.3-2. (2 of 4)
Comparison of criteria air pollutant impacts for disposition of facilities associated with waste processing alternatives.



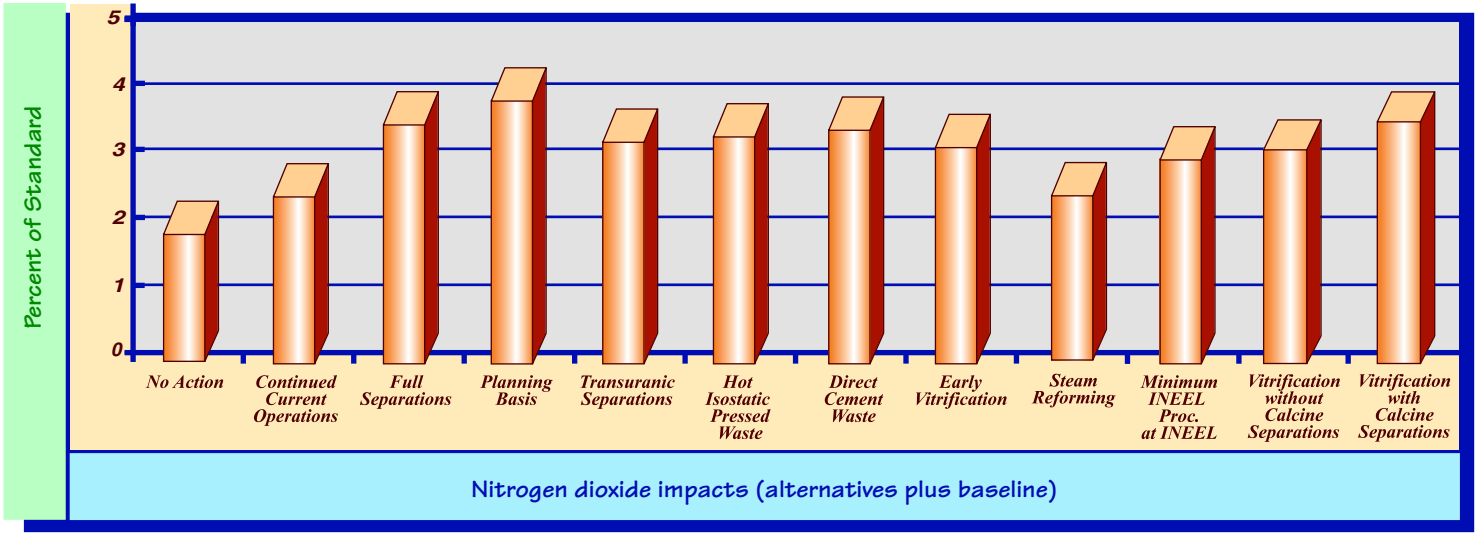
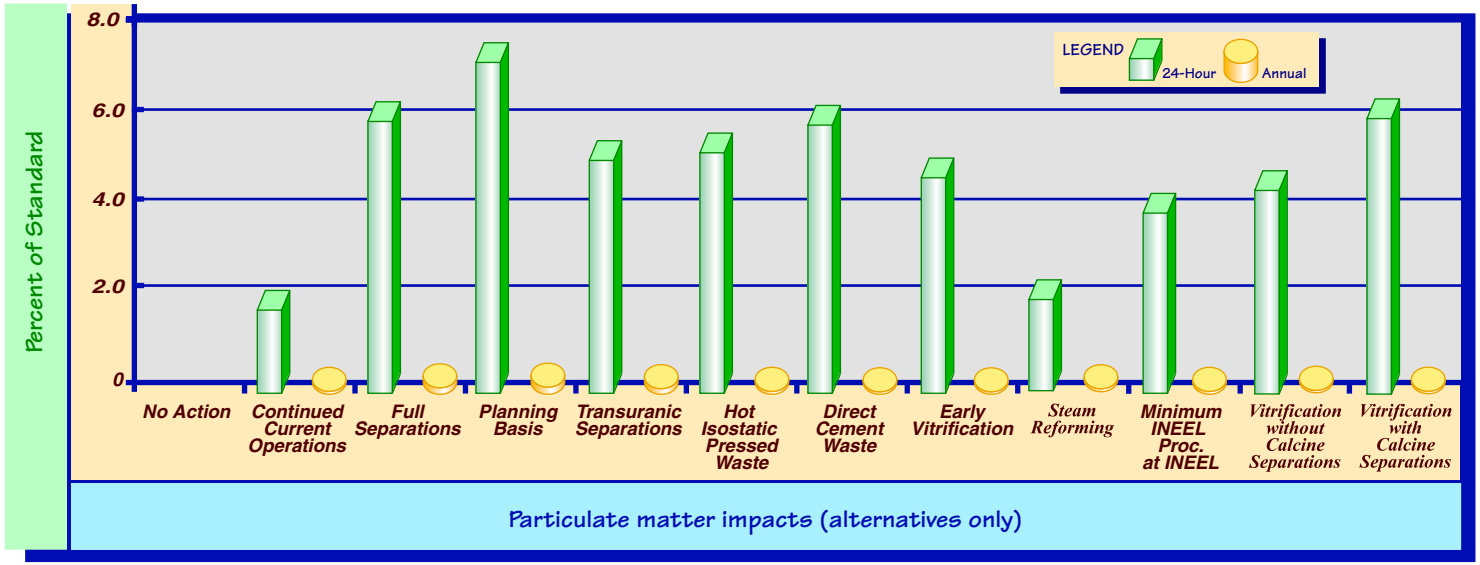


FIGURE 5.3-2. (3 of 4)
Comparison of criteria air pollutant impacts for disposition of facilities associated with waste processing alternatives.



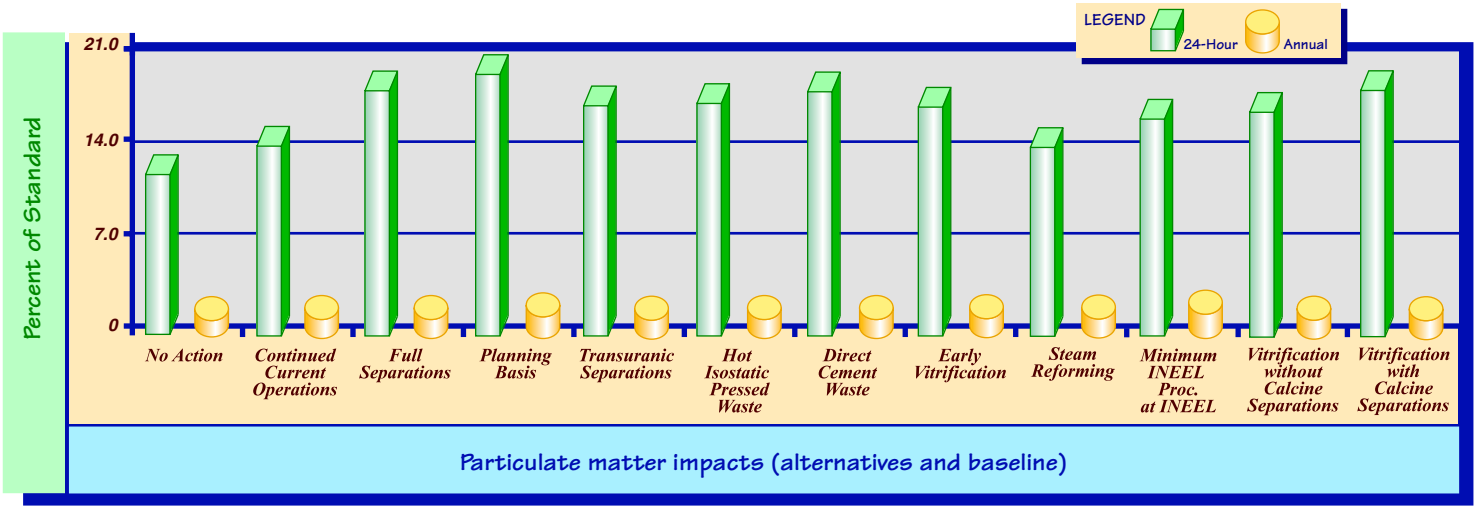
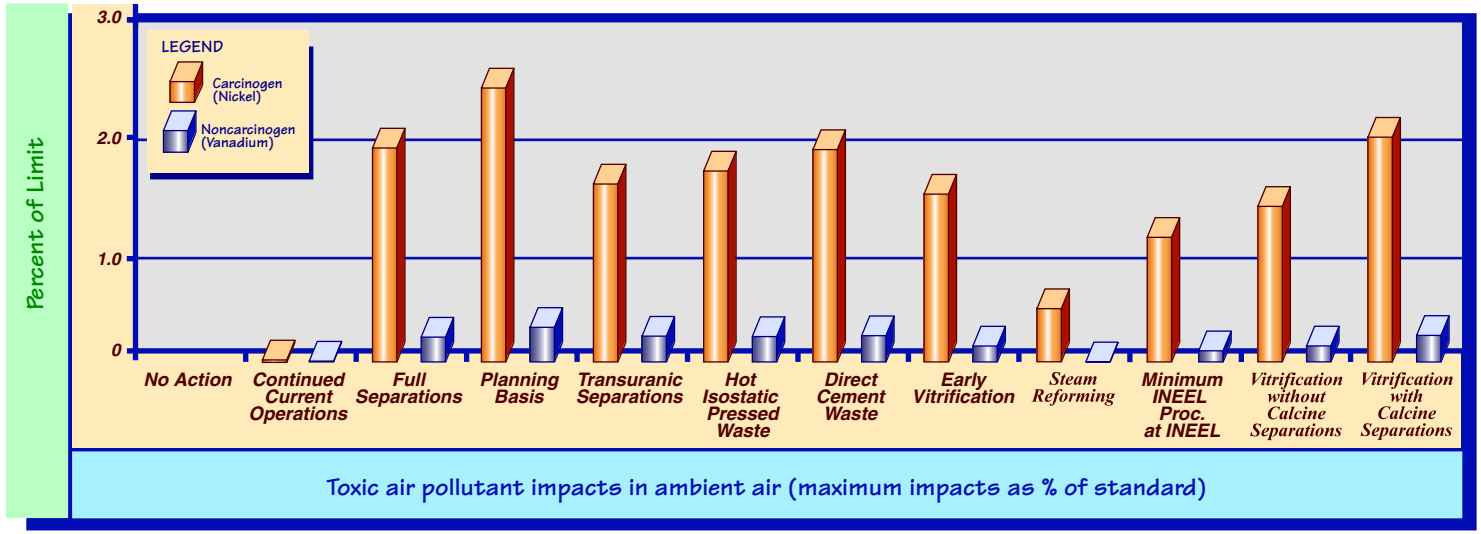


FIGURE 5.3-2. (4 of 4)
Comparison of criteria air pollutant impacts for disposition of facilities associated with waste processing alternatives.



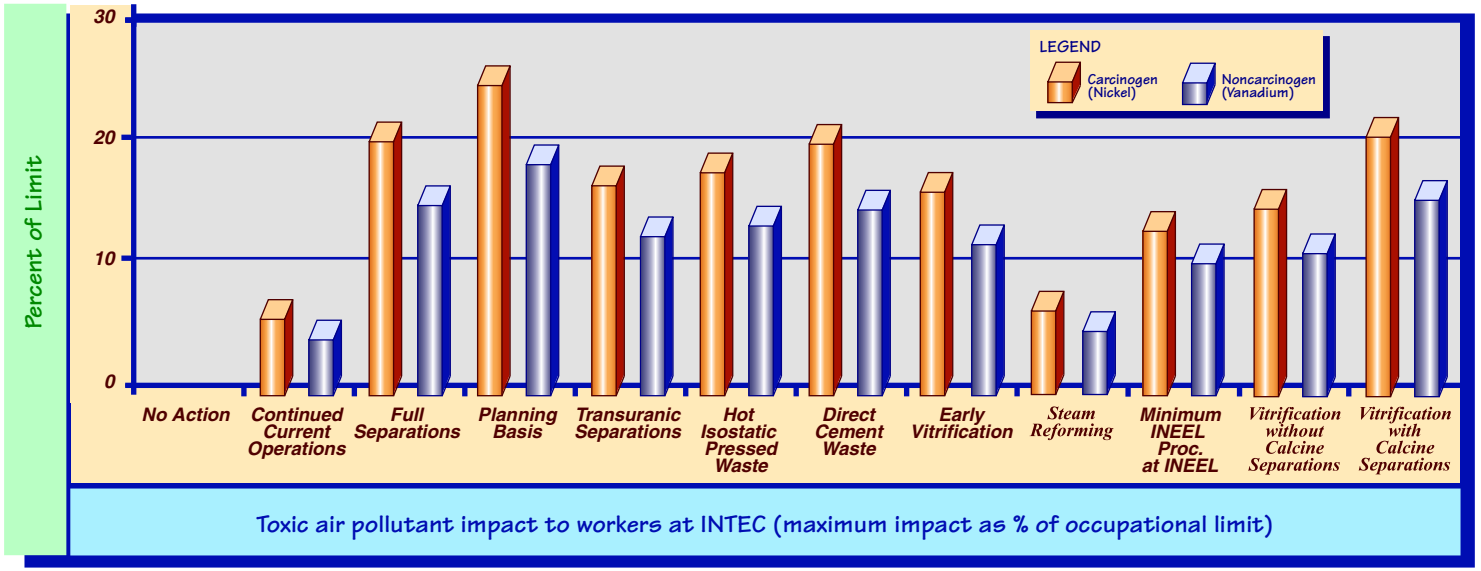


FIGURE 5.3-3.
Toxic air pollutants impacts for disposition of facilities associated with waste processing alternatives.