EXHIBIT K

Tables L-8 and L-9 in DOE's 1999 Final Plutonium Disposition Environmental Impact Statement (DOE-EIS-0283) (DOE's 1999 EIS), entitled "Estimated Dose to the Population and to Maximally Exposed Individuals During the Most Severe Accident Conditions (Plutonium Oxide)" and "Estimated Dose to the Population and to Maximally Exposed Individuals During the Most Severe Accident Conditions (Plutonium Pits)"

EXHIBIT K

The accident consequence assessment is intended to provide an estimate of the maximum potential impacts posed by the most severe potential transportation accidents involving a shipment. The accident consequence results are presented in Table L–8 for the maximum severity accidents involving plutonium dioxide shipments,

Table L–8. Estimated Dose to the Population and to Maximally Exposed Individuals During the Most Severe Accident Conditions (Plutonium Dioxide)[a, b]

	Neutral Conditions[c]				Stable Conditions[f]			
	Population[d]		Maximally Exposed Individual[e]		Population[d]		Maximally Exposed Individual[e]	
Mode and Accident Location	Dose (person-rem)	Consequences (Cancer Fatalities)	Dose (rem)	Consequences (Probability of Cancer Fatality)	Dose (person-rem)	Consequences (Cancer Fatalities)	Dose (rem)	Consequences (Probability of Cancer Fatality)
Truck								
Urban	228,760	114	684	0.68	40,420	20.2	23.2	0.023
Suburban	49,880	25	684	0.68	8,815	4.4	23.2	0.023
Rural	624	0.31	684	0.68	581	0.29	23.2	0.023

[a] The most severe accidents correspond to the NUREG-0170 accident severity Category VIII (NRC 1977).

[b] Buoyant plume rise resulting from fire for a severe accident was included in the exposure model.

[c] Neutral weather conditions result in moderate dispersion and dilution of the release plume. Neutral conditions were taken to be Pasquill stability Class D with a wind speed of 4 m/sec (9 mph). Neutral conditions occur approximately 50 percent of the time in the United States.

[d] Populations extend at a uniform density to a radius of 80 km (50 mi) from the accident site. Population exposure pathways include acute inhalation, acute cloudshine, groundshine, resuspended inhalation, resuspended cloudshine, and ingestion of food, including initially contaminated food (RISKIND assumes that all food is grown in rural areas) (Yuan et al. 1995). It is assumed that decontamination or mitigative actions are taken.

[e] The maximally exposed individual is assumed to be at the location of maximum exposure. The locations of maximum exposure would be 100 m (330 ft) and 500 m (1,650 ft) from the accident site under neutral and stable atmospheric conditions, respectively. Individual exposure pathways include acute inhalation, acute cloudshine, and groundshine during passage of the plume. No ingested dose is considered. Note that the maximally exposed individual receives more dose than the population in a rural location. This analytic phenomena is caused by probabilistic calculations. It is very unlikely that an individual will be nearby in a rural population zone.

[f] Stable weather conditions result in minimal dispersion and dilution of the release plume and are thus unfavorable. Stable conditions were taken to be Pasquill stability Class F with a wind speed of 1 m/sec (2.2 mph). Stable conditions occur approximately one-third of the time in the United States.

and Table L–9 for maximum severity accidents involving plutonium pits. Table L–8 applies to alternatives in which the pit conversion facility is located at Pantex, and large amounts of plutonium dioxides are shipped to a MOX or conversion facility. Table L–9 applies to alternatives in which plutonium pits and metals are shipped to a pit conversion facility at a site other than Pantex. In either table, the accident frequency in rural locations is about 1×10^{-7} per year (once in 10 million years). The frequency of accidents in urban and suburban zones was evaluated. Accidents are much less likely to occur in urban and suburban zones because the total distance traveled is much lower than in rural zones. The impacts represent the most severe accidents hypothesized.

The hypothetical accidents described in Tables L–8 and L–9 involve either a long-term fire or tremendous impact or crushing forces. In the case of crushing forces, a fire would have to be burning in order to spread the plutonium as modeled. These accidents are assumed to cause a ground-level release of 10 percent of the radioactive material in the truck. These accidents are more likely on rural interstates where speeds are higher and where the vehicles spend most of their travel time. NUREG-0170 (NRC 1977) describes the analytic approach in more detail.

The population doses are for a uniform population density within an 80-km (50-mi) radius (Neuhauser and Kanipe 1995). The location of the maximally exposed individual is determined based on atmospheric conditions

at the time of the accident and the buoyant characteristics of the released plume. The locations of maximum exposure would be 100 m (330 ft) and 500 m (1,650 ft) from the accident site for neutral (average)

Table L–9. Estimated Dose to the Population and to Maximally Exposed Individuals During the Most Severe Accident Conditions (Plutonium Pits)[a, b]

	Neutral Conditions [c]				Stable Conditions[f]			
	Population[d]		Maximally Exposed Individual[e]		Population[d]		Maximally Exposed Individual[e]	
Mode and Accident Location	Dose (person-rem)	Consequences (Cancer Fatalities)	Dose (rem)	Consequences (Probability of Cancer Fatality)	Dose (person-rem)	Consequences (Cancer Fatalities)	Dose (rem)	Consequences (Probability of Cancer Fatality)
Truck								
Urban	31,920	16	96	0.096	5,640	2.8	3.3	0.0016
Suburban	6,960	3.5	96	0.096	1,230	0.62	3.3	0.0016
Rural	87	0.044	96	0.096	81	0.041	3.3	0.0016

[a] The most severe accidents correspond to the NUREG-0170 accident severity Category VIII (NRC 1977).

[b] Buoyant plume rise resulting from fire for a severe accident was included in the exposure model.

[c] Neutral weather conditions result in moderate dispersion and dilution of the release plume. Neutral conditions were taken to be Pasquill stability Class D with a wind speed of 4 m/sec (9 mph). Neutral conditions occur approximately 50 percent of the time in the United States.

[d] Populations extend at a uniform density to a radius of 80 km (50 mi) from the accident site. Population exposure pathways include acute inhalation, acute cloudshine, groundshine, resuspended inhalation, resuspended cloudshine, and ingestion of food, including initially contaminated food (RISKIND assumes that all food is grown in rural areas) (Yuan et al. 1995). It is assumed that decontamination or mitigative actions are taken.

[e] The maximally exposed individual is assumed to be at the location of maximum exposure. The locations of maximum exposure would be 100 m (330 ft) and 500 m (1,650 ft) from the accident site under neutral and stable atmospheric conditions, respectively. Individual exposure pathways include acute inhalation, acute cloudshine, and groundshine during passage of the plume. No ingested dose is considered. Note that the maximally exposed individual receives more dose than the population in a rural location. This analytic phenomena is caused by probabilistic calculations. It is very unlikely that an individual will be nearby in a rural population zone.

[f] Stable weather conditions result in minimal dispersion and dilution of the release plume and are thus unfavorable. Stable conditions were taken to be Pasquill stability Class F with a wind speed of 1 m/sec (2.2 mph). Stable conditions occur approximately one-third of the time in the United States.

and stable conditions, respectively. The dose to the maximally exposed individual is independent of the location of the accident. No acute or early fatalities would be expected from radiological causes.

L.6.4 Waste Transportation

Under all of the alternatives being considered in the SPD EIS, some transportation would be required to support routine shipments of wastes from the proposed surplus plutonium disposition facilities to treatment, storage, or disposal facilities located on the sites. All DOE sites have plans and procedures for handling and transporting waste. This transportation would be handled in the same manner as other site waste shipments and would not represent a large increase in the amount of wastes generated at these sites. The shipments would not represent any additional risks beyond the ordinary waste shipments at these sites, as analyzed in the WM PEIS (DOE 1997a).

However, in four specific cases, waste would be generated that is not covered in the WM PEIS (DOE 1997a): (1) transuranic (TRU) waste generated at Pantex from the pit conversion facility; (2) low-level waste (LLW) generated at Pantex from the pit conversion facility; (3) LLW generated at Pantex from the MOX facility, and (4) LLW generated at LLNL during lead assembly fabrication.

TRU waste generated at Pantex was not covered by the WM PEIS Record of Decision (ROD) because there was no TRU waste at Pantex at the time the ROD was issued, and none was anticipated to be generated by ongoing