Supplement Analysis for Disposal of Polychlorinated Biphenyl-Commingled Transuranic Waste at the Waste Isolation Pilot Plant (DOE/EIS-0026-SA02)

1.0 Purpose and Need for Action

Transuranic (TRU) waste is waste that contains alpha particle-emitting radionuclides with atomic numbers greater than uranium (92) and half-lives greater than 20 years, in concentrations greater than 100 nanocuries per gram of waste. Some TRU wastes are mixed with polychlorinated biphenyls (PCBs) (referred to as PCB-commingled TRU waste). PCBs exist in DOE's TRU waste as mixtures of synthetic organic chemicals with physical properties ranging from oily liquids to waxy solids.

Exposure to PCBs can result in adverse health effects. For example, PCBs in blood or in fatty tissue as a result of inhalation, ingestion, or dermal absorption may cause reproductive effects, developmental toxicity, and chloracne in humans. PCBs persist, and can accumulate, in the environment as they move up the food chain. PCBs are considered by the U.S. Environmental Protection Agency (EPA) to be toxic and probably carcinogenic.[1]

The Waste Isolation Pilot Plant (WIPP) near Carlsbad, New Mexico, is the only facility authorized to dispose of TRU waste generated by DOE defense activities.[2] The WIPP repository is located in thick, stable and ancient salt beds 655 meters (2,150 feet) below the ground surface. DOE's PCB-commingled TRU waste would have no disposal option if it could not be disposed of at WIPP.

The *Waste Isolation Pilot Plant Disposal Phase Final Supplemental Environmental Impact Statement* (SEIS-II) (DOE/EIS-0026-S-2), issued in September 1997, analyzed 720 cubic meters (24,500 cubic feet) of PCB-commingled TRU waste in the DOE inventory. DOE's associated Record of Decision (ROD), (January 1998) stated that DOE would dispose of its TRU waste at WIPP. However, the ROD did not include PCB-commingled TRU waste because no facilities were then available to provide the thermal treatment for DOE's waste required at the time. After DOE's ROD was issued, EPA promulgated regulations governing the disposal of PCBs (63 Federal Register 35383, June 1998). This rule defined several types of PCB wastes, including

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[1] PCBs are regulated under the Toxic Substances Control Act, 15 USC 2601 *et seq*. Under the regulatory scheme established by EPA, PCBs are regulated according to their concentration: under 50 ppm; equal to 50 ppm and less than 500 ppm; and 500 ppm or greater. Most wastes containing less than 50 ppm of PCBs are not regulated under the Toxic Substances Control Act (liquid wastes are an exception); wastes containing 50 ppm but not more than 500 ppm are subject to varying regulatory requirements depending on their form. The most stringent regulatory requirements are imposed on concentrations of PCBs at 500 ppm or greater. For purposes of analysis, DOE assumed that all PCB-commingled TRU waste in the DOE complex contains concentrations of PCBs at 500 ppm or greater and thus is subject to the most stringent regulatory requirements.

[2] The WIPP Land Withdrawal Act, Public Law No. 102-579, authorizes the disposal of up to 175,600 cubic meters (6.2 million cubic feet) of TRU waste generated by the Nation's atomic energy defense activities.

PCB bulk product wastes and PCB remediation wastes, and disposal pathways for the various types of these wastes. Under the rule, the PCB bulk product wastes and remediation wastes that constitute the major portion of DOE's PCB-commingled TRU waste can be disposed of in an authorized chemical waste landfill without prior treatment.

DOE consulted with EPA to identify a disposal path for DOE's PCB-commingled TRU waste. As a result of this consultation, DOE received a letter from EPA clarifying that most of DOE's solidified TRU wastes "fall within the definition of remediation waste". The letter further stated this waste "may be disposed of in accordance with the requirements of 40 CFR 761.50 and 761.61," which allow disposal in a chemical waste landfill without treatment.[3] DOE also identified a small amount, estimated at about 5 cubic meters, of PCB liquids and PCB articles, which are not eligible for chemical landfill disposal and recognizes that it needs to work with EPA to formally address the future management of these wastes. For purposes of this analysis, DOE assumed that all of these wastes would be disposed of at WIPP.

In reviewing its inventory of PCB-commingled TRU waste, DOE identified approximately 2,500 cubic meters (88,000 cubic feet) of such waste, located primarily at: the Idaho National Engineering Laboratory (INEEL); the Hanford Site; the Oak Ridge Reservation (ORR); Rocky Flats Environmental Technology Site (RFETS); and the Savannah River Site (SRS). (In addition, DOE has more recently identified a small amount of PCB-commingled waste, less than one cubic meter, at the Knolls Atomic Power Laboratory (KAPL), which is included in this Supplement Analysis. In May 2003, DOE received a chemical waste landfill authorization for WIPP that would allow it to dispose of, at WIPP, up to 2,500 cubic meters (88,000 cubic feet) of PCB-commingled TRU waste. In September 2003, DOE also received a modification to its permit from the State of New Mexico that will allow the disposal of PCB-commingled TRU waste at WIPP.

While DOE's estimate of 2,500 cubic meters of TRU waste containing PCBs greater than 50 ppm was developed in support of its application to EPA for chemical landfill authority, DOE subsequently compiled TRU waste estimates for all sites as required for its WIPP Compliance Recertification Application (CRA) to EPA, submitted in March 2004. These data show a total of about 630 cubic meters of PCB TRU waste, which is within the 720 cubic meters analyzed in the WIPP SEIS-II. However, this figure may not account for all of DOE's TRU waste containing PCBs. Some PCB-commingled TRU waste volumes may be included in several waste streams where the PCB content of the waste was reported as "unknown" in the estimates for the CRA. Through additional characterization, DOE will confirm the PCB content in these waste streams and refine the data in the future. To ensure a conservative analysis, this SA evaluates the higher total volume of 2,500, consistent with DOE's application for chemical landfill authority.

[3] Letter dated February 28, 2002, from John H. Smith, Ph.D., Chemist, EPA, to Lynne Smith, DOE WIPP Office Director.

2.0 Proposed Action

DOE proposes to dispose of up to 2,500 cubic meters (88,000 cubic feet) of PCB-commingled TRU waste at WIPP. Currently, PCB-commingled TRU waste with a concentration less than 50 parts per million (ppm) is authorized for disposal at WIPP if the waste otherwise meets WIPP's Waste Acceptance Criteria. For purposes of this analysis, DOE assumes that all of its PCB-commingled wastes have PCB concentrations of 500 ppm or more.

DOE proposes to characterize and, if necessary, repackage PCB-commingled TRU waste in storage at: INEEL, the Hanford Site[4], ORR, RFETS, and SRS[5] (as well as KAPL) for disposal at WIPP. DOE would then transport this waste to WIPP by truck or rail in U.S. Nuclear Regulatory Commission (NRC)-certified Type B shipping containers. Activities at WIPP would involve unpacking the shipping containers and emplacing the waste in the repository.

3.0 Existing National Environmental Policy Act (NEPA) Analysis

In 1997, DOE issued the SEIS-II, which addressed the management of TRU waste at DOE sites and the management and disposal of TRU waste at WIPP, including the management of PCB-commingled TRU waste. Based on information available at the time the SEIS-II was prepared, DOE believed that the inventory of PCB-commingled TRU waste with concentrations of 50 ppm or greater of PCBs was 720 cubic meters (25,400 cubic feet) (*see* SEIS-II, page A-11, Table A-4).

The January 23, 1998, ROD (63 Fed. Reg. 3624) for the SEIS-II announced DOE's decision to dispose of up to 175,600 cubic meters (6.2 million cubic feet) of TRU waste generated by defense activities at WIPP after preparation to meet WIPP's Waste Acceptance Criteria. This waste included TRU waste generated since 1970 and TRU waste that DOE will generate over the next 35 years but did not include PCB-commingled TRU waste in concentrations equal to or greater than 50 ppm.

DOE's total TRU waste inventory for its sites (stored TRU waste and projected generation of TRU waste through 2033) for the SEIS-II was 170,000 cubic meters (6 million cubic feet). This inventory is referred to as the "basic inventory." The WIPP Land Withdrawal Act authorizes the disposal of 175,600 cubic meters (6.2 million cubic feet) of defense TRU waste. DOE recognized that additional TRU waste not included in the SEIS-II Site Inventory might be identified that would be suitable for disposal at WIPP. For that reason, DOE assumed an additional 5,600 cubic meters of projected TRU waste and analyzed the transportation and

[4] DOE transferred the PCB-commingled TRU waste from the Energy Technology Engineering Center in California to the Hanford Site in Washington in December 2002 for characterization, repackaging, and storage until shipment to WIPP (67 Federal Register 56989).

[5] DOE transferred 9 of a planned 10 railcar shipments including less than one cubic meter of PCB-commingled TRU waste from the Mound Plant in Ohio to the Savannah River Site in South Carolina for characterization, repackaging, and storage until shipment to WIPP (66 Federal Register 38646). The 10th shipment will occur only if necessary as a result of decontamination and decommissioning (D&D) work at the site.

disposal of 175,600 cubic meters (6.2 million cubic feet) of TRU waste under the Proposed Action in the SEIS-II.

In the SEIS-II, DOE analyzed an alternative in which it would treat TRU waste with a thermal process designed to meet the Land Disposal Restrictions of the Resource Conservation and Recovery Act for mixed TRU waste (waste that contains both radioactive and hazardous components) (*see* SEIS-II, Action Alternative 2). Additionally, the thermal process would have satisfied the most stringent disposal requirements of the PCB regulations. Under Action Alternative 2, DOE would have thermally treated approximately 720 cubic meters (25,400 cubic feet) of PCB-commingled TRU waste (*see* SEIS-II, Table 1-1) at the storage sites by vaporizing organic matter and/or vitrification (adding silicon-based materials that would result in a glass-like product). The treated waste, along with other TRU waste, would be shipped to WIPP for disposal. However, capability to thermally treat TRU waste contaminated with PCBs is not available at DOE or commercial facilities.

4.0 New Information

DOE's estimated inventory for its chemical landfill application was approximately 2,500 cubic meters (88,000 cubic feet) of PCB-commingled TRU waste, rather than the 720 cubic meters (25,400 cubic feet) analyzed in the SEIS-II in Action Alternative 2. Thermal treatment of the PCB-commingled waste, which was assumed in the SEIS-II and which would have further reduced the disposal volume of that waste to about 290 cubic meters (10,200 cubic feet) is not available for this waste. Based on changes in EPA regulations, DOE's proposed action does not include thermal treatment of PCB-commingled TRU wastes, and no reduction of the approximate 2,500 cubic meters (88,000 cubic feet) would result.

5.0 Is a Supplemental EIS Needed?

The following discussion compares the potential impacts of the characterization, transportation, and disposal of up to 2,500 cubic meters (88,000 cubic feet) of PCB-commingled waste at WIPP with the potential impacts of TRU waste treatment, transportation and disposal identified in the SEIS-II for the purpose of analyzing whether the changes to the original proposed action are "substantial" or whether there is "significant new information" such that a supplement to the SEIS-II is needed. For this analysis, DOE assumed that all of the PCB-commingled TRU waste contains PCBs in concentrations of 500 ppm or greater. Regulations implementing the Toxic Substances Control Act allow a generator to assume, for the purposes of disposal, the PCB concentration of non-liquid PCB waste is greater than 500 ppm (to which the most restrictive regulations apply) in lieu of sampling and analysis.[6] DOE is taking this approach to avoid unnecessary worker radiation exposures that might result from the sampling and analysis needed to demonstrate the PCB concentrations in the wastes were less than 500 ppm. Further, this approach ensures a conservative estimate of the potential impacts of disposal of this waste at WIPP.

[6] The majority of DOE's PCB-commingled TRU waste has not been sampled to determine PCB content, and, as a result, about 99 percent of this waste is managed as if it contained 500 or more ppm PCBs.

For all but four types of impacts (transportation accidents, facility accidents at WIPP, WIPP performance assessment, and routine transportation), DOE compared the current Proposed Action to the Alternative 2 in the SEIS-II, which included an analysis of the impacts of thermal treatment, disposal, and management of PCB-commingled TRU waste where it is stored and at WIPP. For transportation accidents, facility accidents at WIPP, and WIPP performance assessment impacts, DOE compared the current Proposed Action to Alternative 1 in the SEIS-II. Although this alternative did not include PCB-commingled waste, the treatment assumptions in Action Alternative 1 more closely approximate the current Proposed Action because they do not include the volume reduction and waste immobilization that would result from thermal treatment. This ensured a conservative comparison of potential accidents in which a shipping container would be breached. For routine transportation impacts, which are directly related to waste volume and thus number of shipments, DOE compared the current Proposed Action to the SEIS-II Proposed Action Alternative in the SEIS-II. This alternative analyzed shipments up to WIPP statutory capacity of 175,600 cubic meters (6.2 million cubic feet). The SEIS-II basic inventory of 170,000 cubic meters (6 million cubic feet), with the proposed addition of approximately 2,500 cubic meters (88,000 cubic feet) of PCB-commingled TRU waste, would be within the repository's statutory capacity and the amount analyzed in the SEIS-II Proposed Action Alternative.

Because the current Proposed Action would require neither the use of any additional land nor the construction of new above-ground or below-ground facilities, DOE would not expect any land use, geological, hydrological, biological, air quality, socioeconomic, noise, cultural resource, or environmental justice impacts beyond those identified in the SEIS-II. Although the PCB-commingled TRU waste would be packaged or repackaged to meet WIPP Waste Acceptance Criteria, these wastes would not be thermally treated to destroy the PCBs under the current Proposed Action.

To determine whether the human health (worker and public) impacts of the Proposed Action fall within the range of impacts identified in the SEIS-II, DOE examined the potential impacts that could occur under this currently Proposed Action from (1) the characterization of the PCB-commingled TRU waste and waste-handling activities at the five primary storage sites, (2) the transportation of PCB-commingled TRU waste from these sites to WIPP, and (3) the disposal of untreated PCB-commingled TRU waste in WIPP.

Characterization and Waste Handling

Routine operations at DOE sites with PCB waste. Under the current proposal, up to 2,500 cubic meters (88,000 cubic feet) of PCB-commingled TRU waste would be characterized for transportation and packaged to meet the WIPP Waste Acceptance Criteria. These activities could include neutralizing reactive wastes; reducing size; and packaging, assaying, and sampling to ensure that packaging and transportation criteria have been met. These are the same types of activities that would be used to prepare PCB-commingled TRU waste for treatment at the five sites under Action Alternative 2 analyzed in the SEIS-II. However, under Action Alternative 2, DOE would have thermally treated 720 cubic meters (25,400 cubic feet) of PCB-commingled TRU waste at the larger generator-storage sites. Thermal treatment can mobilize the radioactive

components in the waste and potentially expose workers and the public to slightly larger doses of radiation than under the current Proposed Action, slightly increasing the risk that a member of those populations could face. Because the waste would not be thermally treated and no incinerators would be constructed or operated under the current proposal, the worker and public human health impacts from waste treatment and handling in the current proposal are expected to be less than those small potential impacts identified in the SEIS-II for routine operations at the storage sites with this waste, even though the volume of PCB-commingled TRU waste is larger than was analyzed in the SEIS-II's Action Alternative 2.

As shown in the SEIS-II, from 0.9 to 2.4 cancer fatalities could result from radiation exposure due to treatment activities, while no cancer incidence would be expected in the total population from hazardous chemical exposure (3×10^{-7} probability of a cancer incidence) during routine waste treatment under Action Alternative 2 (*see* SEIS-II, Table 5-46). Similarly, DOE calculates that no additional cancer incidence would be expected in the total population from exposure to PCB-commingled TRU waste (2×10^{-10} probability of a cancer incidence or less) as a result of characterization and handling of PCB-commingled TRU waste at the sites under the current proposal. In other words, the incremental probability of a cancer incidence associated with exposure to the PCB-commingled TRU waste is so small (2×10^{-10}) that when added to the potential probability due to hazardous chemical exposure identified in the SEIS-II (3×10^{-7}), it would not increase the result above 3×10^{-7}.

Facility accidents at DOE sites with PCB waste. In the present analysis, DOE considered the same three accident scenarios at each site that were analyzed in the SEIS-II: a waste spill, a waste drum fire, and an earthquake. As stated previously, the volume of PCB-commingled waste to be processed and disposed of is within the volume analyzed under the Proposed Action. Further, even when adding the volume of PCB-commingled TRU waste to the inventory analyzed for each site under Action Alternative 2, the increment is small, ranging from approximately 2 percent at the INEEL to well below 1 percent at the other four sites. There is no characteristic about the PCB-commingled TRU waste that would cause the annual accident frequency to change, given similar volumes to be processed.

If an accident did occur during characterization and waste management at the five sites while processing PCB-commingled TRU waste, DOE estimates that the impacts would be within those identified in the SEIS-II for Action Alternative 2 as follows. In the SEIS-II, the most severe of the three accidents analyzed was the earthquake, in which 0.8 to 10 cancer incidences were calculated to occur in the exposed population from radiation released (SEIS-II, page 5-109) and no cancer fatalities were expected from exposure to hazardous constituents in the wastes (2×10^{-7} probability of a cancer incidence, SEIS-II, page 5-110). In the case of the current proposed action, the most severe accident would be a waste drum fire during waste processing in which PCBs would be released. No cancer fatality would be expected (5.1×10^{-8} probability of a cancer incidence). Thus, the PCB cancer incidence probability from the worst accident involving PCB's added to the cancer incidence probability resulting from the worst accident analyzed in the SEIS-II, would not increase the result beyond the reported incidence probability of 2×10^{-7}. Further, the waste drum fire would not produce temperatures hot enough to produce dioxins from combustion of the PCBs in the waste.

Routine operations at WIPP. Under the current proposal, waste handling at WIPP would involve unloading the waste drums from the shipping containers and emplacing the waste in the repository. Measures to protect workers and the public against radiation exposure in the PCB-commingled TRU waste would be sufficient to protect against PCB exposure. Therefore, impacts from PCBs in the PCB-commingled TRU waste could only result from facility accidents.

Facility accidents at WIPP. The SEIS-II calculated that, at WIPP, the highest number of latent cancer fatalities from an accident would occur from radiation exposure under Action Alternative 1 in the event of a failure of a fully loaded waste hoist. In this accident scenario, the fully loaded waste hoist, which is similar to a large elevator, is assumed to fall from the entrance to the repository to the bottom, a distance of 655 meters (2,150 feet) and release the contents of the TRU waste drums underground. The SEIS-II provides the annual probability of such an occurrence to be less than 1.0×10^{-6}. Under such a scenario, up to five latent cancer fatalities could occur in the total population surrounding WIPP due to radiological exposure, and serious health effects from hazardous chemicals could result if maximum postulated amounts of heavy metals and solvents were in the drums. For the current proposal, the highest number of latent cancer fatalities from an accident involving PCBs was calculated to result from the occurrence of an underground drum fire in which the PCBs would be inhaled. The SEIS-II provides the annual probability of an underground drum fire that could disperse chemicals is 1.0×10^{-4}. The combined radiological and chemical impacts of this accident would be about 0.3 cancer fatalities (SEIS-II pages 5-40 and 5-41). Under this accident scenario, no additional (7.1×10^{-11}) latent cancer fatalities would be expected from exposure to PCBs in the total population surrounding WIPP.

Transportation

Routine transportation (no accidents involving breach of waste containers). All transportation routes from the five major storage sites to WIPP that would be used under the current proposal were previously evaluated in the Proposed Action in the SEIS-II (transportation of the TRU waste from KAPL to WIPP was analyzed under Action Alternative 2.) The only difference in impacts between shipments in the current proposal and the TRU waste shipments evaluated in the SEIS-II is the presence of PCB materials in the waste. The volume of PCB-commingled TRU waste would be within the SEIS-II Proposed Action inventory of 175,000 cubic meters. The volume of PCB-commingled TRU waste is not expected to increase the total number of shipments beyond those analyzed in the SEIS-II. As it is the number of shipments that most affects potential radiological and nonradiological impacts of transportation, no further impacts are expected beyond those analyzed in the SEIS-II. The routine operational radiological impacts and nonradiological impacts (that is, vehicular trauma accident impacts and routine emissions) of shipments that do not involve a breach of TRU waste shipping containers would be the same as those analyzed in the SEIS-II Proposed Action.

Further, under routine operational conditions, no impacts from PCBs would occur during transportation because the waste would be sealed in TRU waste shipping containers. Containers designed to shield against radiation exposure will also prevent the release of PCBs in the TRU waste.

Transportation accidents. DOE estimated the hazardous chemical impacts of accidents during transportation of PCB-commingled TRU waste using the approach described in the SEIS-II for other hazardous chemicals. Assuming the entire inventory of PCBs in a shipping container (conservatively estimated at 21,000 grams [46 pounds] of PCBs) were released and dispersed as a result of an accident, the resulting PCB concentration to the maximally exposed individual located 1,000 meters (3,300 feet) downwind from the accident would be approximately 0.33 milligram per cubic meter. This concentration is substantially below the level of concentration defined as "immediately dangerous to life and health" by the National Institute for Occupational Safety and Health for PCBs. Because emergency responders would use appropriate protective equipment to clean up any spill, no inhalation, ingestion, or absorption through the skin by cleanup personnel is likely. For those reasons, no health effects would be expected.

Performance Assessment

In examining the potential effect of PCB-commingled TRU waste on the performance of WIPP, DOE relied upon a study prepared by Sandia National Laboratories that evaluated the risks associated with PCBs in the TRU waste inventory over both a long-term and short-term time period (*see Waste Isolation Pilot Plant: PCB Risk Assessment Analysis*, Revision 1, ERMS Number: 515263, November 2000).

In this report, DOE considered the impacts PCB-commingled TRU waste would have on gas generation; radionuclide solubility and transport within the repository (the primary factors that determine how the repository performs); the physical behavior of the repository (which is influenced by gas generation); and impacts to humans from disturbed and undisturbed repository conditions. Results were compared to those identified in the SEIS-II for the worst-case intrusion scenario examined under Action Alternative 1.

The upper estimate of PCBs in the TRU waste inventory that would be disposed of at WIPP under the current proposal (i.e., up to 2,500 cubic meters [88,000 cubic feet]) would be approximately 3,000 kilograms of PCBs (3 metric tons). For the purposes of comparison to the SEIS-II analysis, however, a hypothetical inventory of up to 15,000 kilograms (15 metric tons) of PCBs was used in the study referenced above. This is the inventory of other known organic compounds to be disposed of in WIPP that was used in the SEIS-II analysis.

Analysis of impacts of such a hypothetical PCB inventory of 15,000 kilograms or15 metric tons on radionuclide solubility and transport concluded that this amount of PCBs would not have a significant effect on radionuclide solubility or transport in the repository. These conclusions are based on a comparison of the possible interactions of PCBs with the major radioactive elements in TRU waste to those of other organic compounds previously analyzed and known to be constituents in TRU waste. This analysis concludes that PCBs have a very low solubility under the chemical conditions that would exist at WIPP compared to the other known compounds, PCBs combine with radionuclides less readily than the other organic compounds in TRU waste, and those compounds do not increase the solubility of the radionuclides in the repository. Because the actual amount of PCBs that would be disposed of at WIPP (3,000 kilograms or 3 metric tons) is far less than the hypothetical quantity used in the analysis, potential impacts of the Proposed Action are unlikely to exceed the impacts identified in the SEIS-II.

Analysis of impacts of the hypothetical PCB inventory on the physical behavior of the repository concluded that the addition of PCBs would have no significant effects on the gas generation potential of the waste to be emplaced in WIPP and thus would not impede the salt that will creep and encapsulate the waste following disposal. PCBs are chemically analogous to the cellulosics, plastics, and rubbers found in waste destined for WIPP and would be expected to behave similarly. Like those compounds, PCBs would break down slowly in the WIPP environment, generating gas that could pressurize the repository and tend to impede salt creep. However, even 15,000 kilograms [15 metric tons] of PCBs assumed for purposes of this analysis would add only about one-tenth of a percent to the potential gas-generating materials such as iron-based metals, aluminum-based metals, cellulosics, plastics, and rubbers that could impede salt creep. Because the amount of PCBs that would be disposed of at WIPP is far less than the hypothetical quantity used in the analysis, potential impacts of adding the PCB-commingled TRU waste are unlikely to measurably exceed the impacts identified in the SEIS-II.

Using the same scenarios and assumptions as were used in the SEIS-II, the DOE examined the effect of PCB-commingled TRU waste disposal on the long-term performance of the repository under undisturbed and disturbed conditions. No impacts to humans from PCBs would be expected to result during the 10,000 years after closure of WIPP under undisturbed conditions because there would be no releases from the repository under those conditions.

For disturbed conditions, a 70-kilogram (154-pound) person who breached the repository, while drilling for resources, was assumed to ingest 0.0012 milligram of PCBs per day. Conservative calculations assumed the driller would ingest this amount every day over a 70-year lifetime, which resulted in an estimated 7.0×10^{-6} lifetime cancer risk to that individual from PCB exposure. A 21-day drilling operation would result in an estimated 6.0×10^{-9} lifetime cancer risk for a well-site geologist from PCB exposure. In the SEIS-II, the same drilling scenario resulted in a 4.0×10^{-4} and 1.0×10^{-5} lifetime radiation cancer risk from contact-handled and remote-handled wastes (not containing PCBs), respectively. Thus, the addition of the estimated risk from PCB exposure would not increase the total risk for this scenario above that identified in the SEIS-II.

DOE also considered a scenario under which cattle would drink water from a livestock well contaminated with PCBs disposed of in WIPP (the same scenario was analyzed in the SEIS-II). Under this scenario, drilling into a pressurized brine reservoir beneath WIPP would cause PCBs to enter the groundwater, resulting in a maximum groundwater concentration of PCBs of 2.79×10^{-15} gram per cubic meter. Beef from cattle consuming this water could contain very low levels of PCBs (approximately 8×10^{-15} milligram per kilogram of meat). Consumption of beef (0.115 kilogram [0.25 pound] of meat per day for 70 years) contaminated due to this unlikely scenario was estimated to result in an increased cancer risk of 2.1×10^{-18}. This increase would be too small to affect the analyses reported in the SEIS-II.

In summary, DOE has conservatively reviewed the impacts that would be expected from preparing and transporting up to 2,500 cubic meters (88,000 cubic feet) of PCB-commingled TRU waste from the five sites where it is currently stored and projected to be generated and disposing of this waste at WIPP. The volume of this waste is within the total volume analyzed in the SEIS II Proposed Action. DOE estimated the maximum impacts that could be associated with the addition of PCBs to the hazardous organic compounds analyzed in Action Alternative 2.

These impacts would be so small that in no instance would the presence of PCBs increase the impact results beyond those presented in the SEIS-II.

6.0 Determination

Based on the analyses of the potential impacts on land use, geology, hydrology, biological resources, air quality, socioeconomic conditions, noise, cultural resources, environmental justice, waste handling and characterization, transportation, and long term performance of the WIPP repository of disposal of PCB-commingled TRU waste discussed in this Supplement Analysis, DOE concludes that the Proposed Action is not a substantial change to the proposal analyzed in the SEIS-II. Further, there are no significant new circumstances or information relevant to environmental concerns and bearing on the Proposed Action or its impacts. Therefore, a supplement to the SEIS-II is not needed.

Approved in Washington, DC, on this 23 day of June, 2004.

Jessie Hill Roberson
Assistant Secretary
for Environmental Management