FINDING OF NO SIGNIFICANT IMPACT

PROPOSED CHANGES TO THE SANITARY BIOSOLIDS LAND APPLICATION PROGRAM ON THE OAK RIDGE RESERVATION, OAK RIDGE, TENNESSEE

AGENCY: U.S. DEPARTMENT OF ENERGY

ACTION: FINDING OF NO SIGNIFICANT IMPACT

SUMMARY: The U.S. Department of Energy (DOE) has completed an environmental assessment (DOE/EA-1356) that evaluates potential impacts of proposed changes in the sanitary biosolids land application program on the DOE Oak Ridge Reservation (ORR), Oak Ridge, Tennessee. Changes in lifetime biosolids land application radionuclide loading and the discharge of treated wastewaters from the Y-12 Plant West End Treatment Facility (WETF) are proposed. Lifetime biosolids land application radionuclide planning limits would increase from a cumulative dose of 4 millirem (mrem)/yr to 10 mrem/yr, which have been concurred upon by the Tennessee Department of Environment and Conservation (TDEC)-Division of Radiological Health. The permissible radiological dose from biosolids land application would change from the current limit of maximum cumulative dose of 4 mrem/yr to 10 mrem/yr in receiving soils for the maximally exposed individual. Biosolids land application sites would not change from those that are currently part of the program. Treated WETF wastewater discharges would be rerouted from the current discharge point on Upper East Fork Poplar Creek (UEFPC) to the Y-12 Sanitary Sewer System. This discharge change will occur based upon agreed discharge limits determined by the city of Oak Ridge and the Y-12 Sanitary Sewer Coordinator. Based on the results of the analysis reported in the EA, DOE has determined that the proposed action is not a major federal action that would significantly affect the quality of the human environment within the context of the National Environmental Policy Act of 1969 (NEPA). Therefore, preparation of an environmental impact statement (EIS) is not necessary, and DOE is issuing this Finding of No Significant Impact (FONSI).

PUBLIC AVAILABILITY OF EA AND FONSI: The EA and FONSI may be reviewed at and copies obtained from

U.S. Department of Energy
DOE Information Center
475 Oak Ridge Turnpike
Oak Ridge, Tennessee 37830
Phone: (865) 241-4780.

FURTHER INFORMATION ON THE NEPA PROCESS: Further information on the NEPA process and DOE NEPA regulations may be obtained from

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BACKGROUND: The U.S. Environmental Protection Agency (EPA) supports the beneficial use of municipal sewage sludge (biosolids) for fertilizer and soil conditioner on federal lands (56 *Federal Register* 30448). Since 1983, with the approval of TDEC and the DOE, biosolids from the City of Oak Ridge (COR) Publicly Owned Treatment Works (POTW) has been applied as a beneficial soil amendment to sites on the Oak Ridge Reservation (ORR). An EA (DOE/EA-1042) was completed on this program in 1996 that recommended the use of the existing application sites as well as the addition of ORNL and ETTP biosolids in the city of Oak Ridge Biosolids Program.

Biosolids ranging from 60 to 90% solids are applied to ORR sites from a standard manure spreader at a calculated annual agronomic (nitrogen) loading rate. Like many municipal biosolids, the COR POTW biosolids contain trace amounts of heavy metals and radionuclides. However, by law, it is exempt from regulation as a hazardous substance under the Resource Conservation and Recovery Act (RCRA) and is regulated by TDEC, Division of Water Pollution Control, in accordance with Section 405 of the Clean Water Act. At the present time, radionuclides in biosolids are not regulated by any state or government agency. Results of varying degrees of analyses of biosolids application site soils and vegetation indicate that concentrations of heavy metals, organics, inorganics and pathogens are well below regulatory limits.

The proposed action consists of two changes in the current biosolids land application program: (1) a change in radionuclide planning limit from a dose-based 4 mrem/yr to 10 mrem/yr using a TDEC-approved, risk-based model and (2) allowing treated wastewaters that meet appropriate limits to be discharged to the Y-12 and city of Oak Ridge Sanitary Sewer Systems. DOE action is needed to allow future industrial growth within the city of Oak Ridge while still utilizing the approved ORR land application sites and reduce the operational costs associated with WETF.

ALTERNATIVES: The no-action alternative was considered in accordance with DOE NEPA regulations (10 CFR 1021) to provide a baseline for comparison with the proposed action and alternatives. If no action is taken, the city of Oak Ridge could utilize any or all of the following options: (1) reduce existing radionuclide sources to the sewer system, most notably, the ORNL biosolids, not allowing WETF discharges to the sewer system and severely limiting existing commercial and government radionuclide discharges to the sewer system to accommodate future industrial growth; (2) the city could leave the ORR and freely distribute or sell biosolids to members of the public as long as EPA 40 CFR 503 Class A biosolids regulations are met; and (3) refuse new commercial and government discharges altogether. As a consequence, future city of Oak Ridge commercial growth could be directly impacted and DOE operational cost savings at ORNL ($67K) and WETF ($133K) will not be fully realized.

Another reasonable alternative considered was raising the dose-based radionuclide planning limit from 4 to 10 mrem/y and not allowing WETF discharges to the sanitary sewer system. This alternative was thoroughly evaluated and dismissed from consideration due to the extremely low levels of potential contaminants and the negligible impact upon city wastewater treatment operations and ORR Land Application Sites resulting from WETF discharges.

ENVIRONMENTAL IMPACTS:

Socioeconomics

Because additional personnel would not be needed to continue the biosolids land application program on the ORR, to operate the COR POTW or to operate WETF, a net change in employment would not be realized. The less than $5,000 investment needed for construction of new wastewater pumps and a transfer line to the Y-12 Sanitary Sewer System would not impact the local economy. The increase in the radionuclide planning limits from 4 to 10 mrem/yr could have a major impact on the local economy; however, at the present time financial impacts from future industrial growth requiring radionuclide discharges to the sanitary sewer system is impossible to predict.

Environmental Justice

Potential impacts from the proposed action would be minor and would be restricted to the ORR. Thus, minority or low-income populations in the Oak Ridge area would not be disproportionately affected.

Land Use

Impacts to ORR land use would be unchanged. The resulting increase from 4 to 10 mrem/yr soil radionuclide limit and addition of WETF effluents to the Y-12 and city sewer systems would not effect the future use of the ORR land application sites.

Cultural Resources

In compliance with Section 106 of the National Historic Preservation Act, DOE consulted with the Tennessee State Historic Preservation Officer (SHPO) during the 1996 EA (DOE/EA-1042) regarding potential impacts to archaeological, historic, and cultural resources on the ORR. The SHPO determined that no adverse impacts would result from the proposed action. Biosolids application is prohibited in known archaeological and historic sites on the ORR. No further consultation was required with the SHPO because the same sites utilized in the proposed action for this EA were evaluated by the SHPO in the 1996 EA.

Geology and Soils

Biosolids application sites are prohibited in areas with known geological features, such as sinkholes. Both positive and negative impacts to soils result from the biosolids land application program. In addition to the nutrients derived from the biosolids, soils also receive heavy metals and radionuclides in trace quantities. Monitoring of specific soil constituents is performed regularly as prescribed by EPA and TDEC to protect public health and the ecosystem. Hence, significant adverse effects would not be expected. In addition, predictive modeling performed as part of the EA indicates that the land application sites would never achieve the proposed 10 mrem/yr dose planning level.

The addition of WETF discharges results in a minimal 0.04 gram per kilogram increase in total uranium content of the city of Oak Ridge Biosolids and 0.002 milligram per kilogram increase in the life of the ORR Land Application Sites. There would be no significant impacts to geology and soils from the proposed actions.

Water Resources

Without the implementation of stringent biosolids land management practices specified by EPA, TDEC, DOE, and the COR, pathogenic, chemical, and/or radiological contaminants in biosolids could be transported to streams, ponds, and wetlands on the ORR. Such contamination could adversely affect aquatic organisms and ultimately man through bioaccumulation in the food chain. Management practices used to minimize the potential for significant impacts include limitations on land slope, prohibition of biosolids application sites in wetlands and floodplain, restrictions on application during precipitation and extreme cold, and establishment of minimum buffer zones between application sites and federal and state waterways. Vegetative cover is also used to reduce site runoff. To date, surface water monitoring on the ORR has shown no evidence of significant water quality degradation. Continuation of the program, as currently implemented, would not be expected to adversely impact ORR and offsite water resources.

Both WETF and the city of Oak Ridge discharge to East Fork Poplar Creek (EFPC). Removal of WETF discharges from NPDES Outfall #502 to the city of Oak Ridge Sewer System results in an additional maximum of 7.57 kilograms per year discharged to the city of Oak Ridge. A risk assessment was performed for the proposed discharge to the city of Oak Ridge sewer system and the total calculated risk was 10^{-9}, well below the acceptable EPA and DOE risk limit of 10^{-4}. Significant adverse impacts would not be encountered to water quality.

Air Quality

Atmospheric emissions from biosolids application are limited to dusts generated by spreading dried biosolids on land areas. Diffusion and deposition of radionuclide and chemical constituents in the dust particulates increases with time and distance from the application sites. Public access to the ORR is restricted, therefore, it is unlikely that humans would be affected by applications. An air dispersion model calculated that 0.00008 mrem/yr dose would be received for a person standing in an area receiving biosolids application. Significant impacts to air quality are not expected from the proposed actions.

Ecological Resources

Significant adverse effects to biota would not result from the proposed action. The physical presence of biosolids application vehicles would temporarily disturb and displace resident wildlife. Direct mortality would be minimal. Radionuclide and heavy metal monitoring of biota collected historically throughout the program do not indicate off-normal or elevated levels. Although listed threatened and endangered species are known to occur on the ORR, none have been adversely affected by biosolids application at specific ORR sites. DOE routinely and frequently consults with TDEC, the Tennessee Wildlife Resources Agency, and the U.S. Fish and Wildlife Service to ensure that protected species and habitat are not adversely impacted by the biosolids land application program and other DOE actions on the ORR. A full biological assessment was performed for the federally listed Gray and Indiana bats in which no impacts were projected from the proposed actions.

Occupational and Public Health and Safety

Radiological: Workers may be exposed to radionuclides in biosolids by incidental ingestion and inhalation of particulates during handling and application. The health risk analysis conducted for this proposed action concludes that the combined chemical and radiological risks to workers would be minimal and within the EPA value for excess lifetime cancer risk (10^{-4}). Monitoring of biosolids application program workers for more than a decade has shown no detectable exposures to radionuclides. Offsite, the public exposure to radionuclides in the biosolids applied on the ORR would continue to be extremely low as evidence from the air dispersion modeling conducted for an on-site worker (0.00008 mrem/yr). The proposed dose planning level of 10 mrem/year was established with concurrence from TDEC because it is protective of human health and the environment.

Nonradiological: With improper management, worker and public health could be adversely affected by accumulation of heavy metals and pathogens in the soil, which in turn are accumulated in food and water. Because the historically conservative loading limits of the program have been less than EPA and TDEC limits established to protect human health, chemical contaminants in receiving soils have remained below acceptable levels. Proposed changes to the program would continue to restrict biosolids loading to the limits established by EPA and TDEC. Numerous analyses conducted within the EA demonstrate no projected nonradiological impacts upon human health or the environment.

DETERMINATION: Based on the findings of DOE/EA-1356, DOE has determined that the proposed changes in the sanitary biosolids land application program on the Oak Ridge Reservation, Oak Ridge, Tennessee, do not constitute a major Federal action that would significantly affect the quality of the human environment within the context of the National Environmental Policy Act. Therefore, preparation of an environmental impact statement is not required.

Issued at Oak Ridge, Tennessee, this 16 day of Feb. 2003.

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