STATEMENT SUBMITTED

BY THE

UNITED STATES NUCLEAR REGULATORY COMMISSION

TO THE

SUBCOMMITTEE ON OVERSIGHT AND INVESTIGATIONS

COMMITTEE ON COMMERCE

UNITED STATES HOUSE OF REPRESENTATIVES

CONCERNING

THE PADUCAH GASEOUS DIFFUSION PLANT: AN ASSESSMENT OF WORKER SAFETY AND ENVIRONMENTAL CONTAMINATION

SUBMITTED BY

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TESTIMONY BEFORE THE SUBCOMMITTEE ON INVESTIGATIONS
AND OVERSIGHT
OF THE HOUSE COMMERCE COMMITTEE
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Good morning, my name is Malcolm Knapp and I am an Executive Assistant in the Office of the Executive Director for Operations. Thank you for providing me the opportunity to discuss the NRC responsibilities regarding the Paducah gaseous diffusion plant and associated current issues. I will briefly summarize these responsibilities, risks posed to workers and the public, and NRC's current regulatory actions related to the Paducah plant.

NRC Responsibilities

The Atomic Energy Act (AEA), as amended by the Energy Policy Act of 1992, assigns NRC the responsibility for regulating the safety, safeguards, and security of the gaseous diffusion plants, which are owned by the Department of Energy (DOE) but leased and operated by the United States Enrichment Corporation (USEC), now a non-Government corporation. The NRC takes this responsibility for worker and public health and safety very seriously. NRC promulgated requirements in 10 CFR Part 76 on September 23, 1994, that provide the regulatory basis for NRC certification and inspection of USEC's operation of the gaseous diffusion plants. A 1997 Memorandum of Understanding (MOU) between DOE and NRC further clarifies NRC's and DOE's interactive roles for safety, safeguards, and security in those areas leased by USEC.

NRC certified the gaseous diffusion plants in November 1996 and assumed regulatory responsibility in March 1997. As stated in NRC's reports to Congress in 1998 and 1999, the NRC has determined that both plants are operating safely and in accordance with NRC requirements.

Areas Not Under NRC Responsibility

Under the USEC-DOE lease agreement, certain areas within the plants are not included in the leased areas, and these areas remain under DOE, not NRC, regulatory responsibility at Paducah. These are areas containing material from operations conducted by DOE to support defense program activities (also known as legacy material) and areas containing significant quantities of high enriched uranium. DOE retains responsibility for environmental protection, safety, safeguards, and security for these excluded areas, and DOE retains responsibility for environmental restoration activities and waste management of the legacy material. Some areas within USEC leased buildings are not part of the leased USEC space, these areas were retained by DOE and are used to store or contain DOE legacy material. These areas are physically delineated as DOE space and are not subject to NRC regulation. Under the Atomic Energy Act, unless expressly stated otherwise by statute, the NRC does not regulate DOE activities.

Contamination

Prior to NRC's assumption of regulatory oversight in March 1997, USEC performed a site-wide survey of indoor and outdoor areas of the plants to identify any contaminated areas. USEC placed placards in those contaminated areas which USEC was leasing from DOE and which were to be under NRC jurisdiction to identify clearly these contaminated areas. In addition, any USEC areas which become contaminated as a result of USEC operations, for example, maintenance activities, are decontaminated or marked by USEC as contaminated areas. In

each of these cases, USEC controls these areas in accordance with its Radiation Protection Program as described in the Safety Analysis Reports.

Areas under NRC jurisdiction are routinely surveyed for contamination. USEC surveys the lunchrooms and breakrooms in the cascade building area control rooms daily during the work week to verify that any contamination levels are below limits that ensure public and plant staff safety. In addition, onsite NRC resident inspectors regularly assess contamination controls to determine the effectiveness of the plant Radiation Protection Program. In general, these assessments which are reported by the resident inspectors in their monthly reports, have found that USEC's contamination controls in place on USEC leased space are consistent with the plant Radiation Protection Program and are, therefore, acceptable.

Worker Exposure

Worker exposure occurs from the inhalation or ingestion of radioactive material (internal dose) and exposure to radiation from sources outside the body (external dose). Both doses are added together to calculate total dose.

Based on NRC review of USEC records since 1997, worker radiation exposures at Paducah in NRC-regulated areas are very low and in compliance with NRC requirements. The program uses personnel dosimetry (badges) for monitoring and recording external radiation exposures and analysis of urine samples to monitor and estimate worker internal radiation exposures. Radiation doses are reported in units of rem or millirem (1000 millirem equals 1 rem). The NRC annual dose limit for a worker from NRC licensed operations is 5 rem.

In 1997, those Paducah workers who did receive a dose had an average annual total dose of 0.051 rem, while the average annual total dose at an NRC-licensed power reactor was 0.202 rem and at an NRC-licensed fuel cycle facility was 0.236 rem. The largest total dose recorded in 1997 for any worker at the plant was 0.365 rem. Less than 2% of that dose was estimated to be from internal radiological contamination.

For 1998 the largest total dose recorded for any worker at the Paducah plant was 0.382 rem. Again less than 2% of that dose was estimated to be from internal radiological contamination. To put these doses into perspective, the average dose from natural sources to a person in the United States is 0.300 rem per year and, as noted previously, the NRC annual limit on total dose from NRC licensed operations to a radiological worker is 5 rem.

Public/Environmental Exposure

USEC provided to NRC and other regulatory agencies an environmental compliance status report containing then current environmental and effluent monitoring data as part of its application for certification. The report for 1997 is publically available and shows that concentrations of transuranic radionuclides in airborne emissions, water samples, soil samples, and sediment samples are within regulatory limits.

Since NRC assumed regulatory oversight of the gaseous diffusion plants on March 3, 1997, NRC is not aware that any disposal by USEC of radioactive waste from Paducah has occurred at other than authorized disposal facilities. Although portions of the USEC-leased areas are contaminated with radioactive materials and will remain contaminated during enrichment

operations, these areas will be decommissioned by DOE after the USEC lease is terminated and prior to release of the site in accordance with criteria established by DOE.

No Current Activities Involving Recycled Uranium or Precious Metals

The reactor tails program, which enriched recycled uranium recovered from reprocessed defense reactor fuel, was conducted by the Atomic Energy Commission (AEC) and DOE before USEC took over plant operations and before NRC assumed regulatory oversight of the gaseous diffusion plants on March 3, 1997. The recycling of precious metals also was conducted at Paducah by the AEC and DOE before NRC assumed regulatory oversight of the gaseous diffusion plants. Although both the reactor tails and precious metals recycling programs were completed before USEC took over plant operations, USEC's worker protection programs are required to assess the potential impacts of contaminants from both historical and current operations that may impact the work environment.

Current Regulatory Actions

The NRC maintains a full-time staff of two onsite resident inspectors at each plant who are tasked with monitoring day-to-day plant operations, including radiological control practices, in those areas of the facility for which NRC has regulatory responsibility. In addition, inspections by both Headquarters and Regional specialist inspectors are conducted on about a monthly basis to assess performance of plant operations.

An NRC inspection team comprised of health physics specialists conducted a confirmatory inspection of USEC's Radiation Protection Program at the Paducah plant during the week of August 30, 1999, and conducted a similar inspection at the Portsmouth plant the week of September 13, 1999. Following a review of the results, the team expects to close the inspection in mid-October. The objectives of the inspection are to confirm the adequacy of USEC's: (1) understanding of the radiological contamination on site; (2) controls for worker protection for transuranics such as neptunium and plutonium, technetium and uranium radionuclides; (3) internal and external dose assessment program for these radionuclides; (4) characterization methodology for measuring these radionuclides; and (5) environmental and effluent monitoring practices for these radionuclides.

Although the NRC inspection team is still reviewing the results of the Paducah and Portsmouth inspections, they have tentatively concluded that the USEC Radiation Protection Programs at Paducah and Portsmouth are effective in identifying and controlling worker exposure to contamination. Air sampling and work controls in areas where workers could possibly get exposed to plutonium contamination are effective and no internal exposures were indicated. The team identified two issues which require further investigation: (1) the methodology USEC uses to assess transuranic uptakes; and (2) the methodology USEC uses to determine the percentage of transuranics in the site's contamination. USEC is preparing information to respond to these issues, and some members of the NRC inspection team returned to Paducah this week to follow up. Although the methodology used by USEC to assess internal dose is being evaluated further, the NRC has not found any indication that the annual dose to any worker or member of the public has approached NRC safety limits in portions of the facility that are regulated by NRC. Inspection exit meetings which are open to the public are anticipated to be held near the two sites in early October 1999.

Conclusion

In conclusion, USEC is operating the Paducah gaseous diffusion plant safely and in accordance with NRC requirements. Nevertheless, the recent series of articles has prompted additional scrutiny by the NRC to ensure continued protection of workers and the public from exposure to uranium and other radioactive materials. Although our ongoing inspection at Paducah raises several issues that require additional information and assessment, based on our reviews to date, we have found that existing exposures to USEC workers at the plants are well within NRC regulatory limits.