## The Past





#### Uranium

- Uranium is a naturally occurring element containing U-235 and U-238 isotopes (with a very small fraction of U-234). Only the U-235 isotope is fissionable.
- Uranium enrichment is the process of increasing the concentration of U-235 isotope in natural uranium and decreasing that of U-238 isotope. Enrichment is a critical step in transforming natural uranium into nuclear fuel to produce electricity.



#### Uranium Enrichment Facilities in the United States



# 2. Before the PGDP was built in 1952, the property was used for what purpose?

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- 2. State Forest
- Department of Defense Munitions Facility
- 4. Amphibious Landing Craft Production Facility
- 5. German Prisoner of War Camp

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3. What event caused the PGDP to be placed on the Environmental Protection Agency's (EPA) Superfund National Priority List?

- 1. Technetium and TCE were discovered in private drinking wells northwest of the plant
- 2. PCBs were discovered in Little Bayou Creek
- High levels of plutonium were discovered along Metropolis Lake Road
- 4. A significant number of dead fish were discovered in Big Bayou Lake
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4. According to the US Agency for Toxic Substances and Disease Registry (ATSDR), which of the following events occurred at the PGDP?

- During November 1960, a cylinder ruptured releasing at least 11,000 pounds of UF6 into the atmosphere
- 2. During December 1962, an explosion and fire released 5,000 pounds of UF6 into the atmosphere
- Surface waters around the PGDP were contaminated with chemicals (e.g. PCBs, TCE) and radioactive materials as a result of process operations and past waste disposal activities.
- 4. Activities at the PGDP have contaminated surface soil and sediment.
- 5. All of the above

Reference: ATSDR – http://www.atsdr.cdc.gov/hac/pha.asp?docid

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5. Past practices (from 1950 to mid-1980) at the PGDP resulted in the burial of over 400,000 cubic yards of waste into burial grounds that are currently undergoing remedial investigation. Which of the following types of contaminants in the waste are in the burial grounds?

- 1. Uranium and other metals
- Trichloroethylene (TCE) a metal degreaser
- Polychlorinated biphenyls (PCBs) – used in electrical transformers
- 4. Asbestos
- 5. All of the above

Reference: DOE – Work Plan for the Burial Grounds Operable Unit Remedial Investigation/Feasibility Study at the Paducah Gaseous Diffusion Plant DOE/OR/07-2179&D2/R1 5. Past practices (from 1950 to mid-1980) at the PGDP resulted in the burial of over 400,000 cubic yards of waste into burial grounds that are currently undergoing remedial investigation. Which of the following types of contaminants in the waste are in the burial grounds?

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### **PGDP Burial Grounds**



Names & Locations of Burial Grounds

SWMU = Solid Waste Management Unit

- SWMU 2 C-749 Uranium Burial Ground
- SWMU 3 C-404 Low-Level Radioactive Waste Burial Ground
- SWMU 4 C-747 Contaminated Burial Yard and C-748-B Burial Area
- SWMU 5 C-746-F Burial Yard
- SWMU 6 C-747-B Burial Ground
- SWMUs 7 and 30 C-747-A Burial Ground and Burn Area and the area beneath SWMU 12
- SWMU 13 C-746-P/P1 Scrapyard buried metal
- SWMU 145 Area P (residential/ inert borrow area) and old North-South Diversion Ditch (NSDD)

6. The PGDP currently uses the same amount of electricity as a city the size of:

- 1. Nashville
- 2. Lexington
- 3. Owensboro
- 4. Frankfort
- 5. Paducah

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