

Till, J.E., G.G. Killough, K.R. Meyer, W.S. Sinclair, P.G. Voillequé, S.K. Rope, and M.J. Case. 2000. "The Fernald Dosimetry Reconstruction Project." *Technology*, Vol. 7 pp270-295.

**ABSTRACT:** This article summarizes the methods and results of estimation of dose and risk of fatal cancer resulting from releases of radionuclides from 38 years of operations at the Fernald Feed Materials Production Center (FMPC) near Cincinnati, OH. The key findings show that people who lived near the facility were exposed to the radioactive decay products of radon and to uranium. Radon decay products contributed most of the radiation dose from past FMPC releases, which were highest before 1980. The organs receiving the highest equivalent radiation doses were, in order, lung, bone surfaces, red marrow, kidney, and liver. Nine exposure scenarios were developed to give a sense of the relationship between the doses and risks and various modes of exposure to the Fernald releases. Distance from the FMPC was the most important determinant of the exposure. More than 95% of the total risk is given by the risk of lung cancer. Depending on the scenario, the median, or 50th percentile, estimate of the lifetime risk of fatal lung cancer ranges from 0.11% to 1.3%. There is a small chance of a risk as high as 9.6% (highest exposure scenario, 95th percentile) or as low as 0.02% (lowest exposure scenario, 5th percentile). The median risk (1.3%) for the highest exposure scenario is about the same risk attributed to the average background radiation exposure over a lifetime (1.25%). The possibility of chemical toxicity from uranium in the human kidney is possible for two scenarios investigated, but these effects are based on inferred rather than directly known clinical or occupational data.

Meyer, K.R., P.G. Voillequé, D.W. Schmidt, S.K. Rope, G.G. Killough, B. Shleien, R.E. Moore, M.J. Case, and J.E. Till. 1996. "Overview of the Fernald Dosimetry Reconstruction Project and source term estimates for 1951-1988." *Health Physics*. 71(4):425-37.